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FEMORAL HERNIA

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ANATOMY

In order to best understand the mechanics of femoral hernia, it is probably wise to first consider a brief resume of the anatomy of the femoral region. The femoral canal, through which the hernia makes its exit from the abdominal cavity, is contained within the femoral sheath. This sheath is formed by a prolongation downward, behind the inguinal ligament of the fasciae which line the abdomen, the transversalis fascia being continued downward *in front* of the femoral vessels and the iliac fascia *behind* them. The lateral wall of the sheath is vertical and is perforated by the lumbo inguinal nerve; the medial wall is directed obliquely downward and lateralward and is pierced by the great saphenous vein and by some lymphatic vessels. The femoral sheath is divided by two vertical partitions which connect its anterior and posterior walls. The lateral compartment contains the femoral artery, the middle the femoral vein, and the medial, with which we are chiefly concerned, is the smallest and comprises the femoral canal.

Femoral hernia may be described as a protrusion or extension of the peritoneum through the femoral ring and down the femoral canal. Usually the hernia lies medial to the femoral vein and manifests itself as a swelling of varying size at the lower end of the femoral canal, protruding forward through the saphenous opening. Occasionally this swelling may extend upward and present as a swelling above the level of Poupart's ligament.

Occurrence of femoral hernia as compared to inguinal is rather rare, the proportion being stated by Coley as *one* to *seventeen*, at the Hospital for Ruptured and Crippled, with similar figures from the London Truss Society.

Robert Rutherford in the Lancet of September 3, 1927, submits the following interesting statistics from the records of the Belgrave Children's Hospital from 1908 to 1927: There were 1098 hernias operated and of this number, 947 were inguinal, 148 umbilical, and 5, or .4 of one per cent were femoral. This would tend to prove that femoral hernia is rarely congenital.

Femoral hernias are more common in women than men and rare in children. They are usually unilateral, the right side being more common than the left. They are rarely ever of very large proportions, but are much more prone to strangulation than the inguinal type, due to the small and rigid ring which the protrusion traverses, and the sharp edge of the fascias forming the anterior wall, making the return of the contents frequently impossible. Strangulated and irreducible femoral hernias occur in much greater relative frequency than the inguinal type.

In order that the importance of femoral hernia may be more properly appreciated, I should like to mention a few circumstances which have been encountered in connection with operations for this condition.

Richard Hubrich in 1929, reported the case of a woman, aged 75, in whom a hernia of twenty years standing suddenly protruded and could not be reduced and operation revealed the contents of the sac which included the appendix, right tube and ovary and the right half of the senile involuted uterus. The patient recovered in three weeks.

Norman Hodgson in October, 1925, reported a case of strangulated femoral hernia associated with an appendiceal abscess in the hernial sac, which occurred eight months previously. The sac revealed an active draining sunus on its medial side. Operation showed the appendix in the sac with a perforation at its tip, in addition to a loop of strangulated ileum.

This patient was a woman 70 years of age. The operation was followed by uneventful recovery.

In the March, 1926, issue of Surgery, Gynecology and Obstetrics, Walter Hughson, publishes a case in which a varix of the superficial epigastric vein was diagnosed and operated upon as a femoral hernia. It was ligated and excised and followed by rapid and uneventful recovery.

A large diverticulum of the bladder measuring about 5 cm. in diameter was found to be the contents of a femoral hernia in a woman, aged 54. The report of this case was published by Traxler in 1928. At operation, the diverticulum was removed and the patient discharged as cured on the eleventh post-operative day.

ETIOLOGY

In the July, 1924, British Journal of Surgery, J. Phillip Buckley of Manchester, discusses at great length the etiology of the femoral hernia sac and concludes that it is a preformed sac and is not formed contemporaneously with the expulsion of a viscus. In general, the contributing causes of acquired femoral hernia may be accepted as hard manual labor, any prolonged straining or exertion; prolonged increase in intra-abdominal pressure, especially as in pregnancy; trauma, generally relaxed abdominal walls, emaciation with loss of all preperitoneal fat around the femoral opening, etc. A few workers have claimed that operation for inguinal hernia, which tends to elevate the edge of Pouparts' ligament predisposes to femoral hernia.

DIAGNOSIS

The symptoms are similar to those of inguinal hernia. The bulging however, first presenting below Poupart's ligament and is increased by straining and coughing. On palpation, the mass may be quite tender and there is usually an impulse on coughing. Frequently the mass cannot be reduced due to the rigidity of the femoral ring.

The diagnosis can usually be made without difficulty but occasionally it is necessary to rule out enlarged inguinal glands, psoas abscess, inguinal hernia and very rarely a varix of the saphenous vein, and lipomas over the femoral area.

TREATMENT

After making a diagnosis of femoral hernia one must decide by what method to effect a cure. There are two routes which are most generally accepted, as offering the most effective means of securing permanent relief from this condition.

The first, and the one most commonly used is by the femoral route, while the second is from above by the inguinal route.

The results of both methods are approximately the same as reported by Watson, who collected 675 cases from various clinics with the following results:

Four hundred sixty-nine cases were operated by the femoral route with the closure of the ring from below with 19 recurrences or a percentage of 4.05; while 206 cases were operated by the inguinal route, with 10 recurrences or a percentage of 4.85.

From the above figures it would seem that the femoral route is slightly preferable; since the percentage of recurrences is slightly less and also possessing the advantage of not invading the peritoneal cavity and possibly traumatizing or infecting the viscera, producing adhesions and potential intestinal obstructions.

The inguinal route is undoubtedly preferable in the presence of damaged viscera which may require resection of gangrenous intestine or removal of a portion of the bladder, an acutely inflamed appendix or adnexal complications. It also has the advantage of a higher ligation of the hernial sac and a better view of the ligaments and fascia around the femoral ring. Unless there is evidence of visceral destruction or gangrene of intestine, I am personally inclined to favor the femoral route.

There are a number of other more complicated procedures which have been devised by various workers, using various types of flaps and plastic closures providing a stronger closure of the ring while going to the opposite extreme is Ochsner who advocated only a thorough dissection and high ligation of the hernial sac with no closure of the ring whatever.

OPERATIVE TECHNIQUE

With your indulgence I should like to review very briefly the two most commonly used procedures, the first of which is the Bassini or some modification of it and is described as follows:

An incision about 8 to 10 cm. long is made parallel to and 1 cm. below Poupart's ligament, through the skin and sub-

cutaneous tissue. Care must be exercised here to avoid injury to the saphenous vein. The falciform portion of the fascia lata is exposed and the femoral vessels and nerve located. The sac is then isolated and freed of all fat, drawn down, ligated as high as possible, and removed. Occasionally, the contents are not readily replaced due to the small ring and it may be necessary to nick a small portion of Gimbermat's ligament to reduce the contents into the abdomen. The next step is the closure of the femoral ring which is effected by suturing the falciform portion of the fascia lata and Poupart's ligament above to the pectineus fascia below. This can usually be accomplished with from two to four interrupted sutures of 30-day chromic catgut.

The interrupted sutures are preferable to a purse string closure of a single suture which might possibly break and permit a recurrence of the patency of the femoral ring. The remainder of the closure is completed by any method in use by the individual operator.

The second most commonly used method is by the inguinal route and is credited to Ruggi of Bologna, who advised its use in 1893, and who developed and perfected the technique. However, it was first used by T. Annandale, whose report was published in the Edinburgh Medical Journal in 1876.

Very briefly the method is as follows: An incision is made 1½ cm. above and parallel to Poupart's ligament, the medial extremity extending beyond the external inguinal ring down over the pubic bone. The external oblique fascia is divided in the direction of its fibers and the edges dissected back. The conjoined tendon and spermatic cord are exposed and retracted upward and Poupart's ligament thoroughly exposed. The tranversalis fascia is divided medial to the deep epigastric vessels, which are retracted laterally. The peritoneum is then opened, the hernia reduced and the sac is inverted as in turning the finger of a glove inside out. It is then ligated at the level of the peritoneal cavity and excised. Closure of the ring is next accomplished by suturing Cooper's ligament to the shelving edge of Poupart's ligament with interrupted chromic catgut sutures.

The repair is completed as in repairing an inguinal hernia, except that the cord is not transplanted.

Advantages of the inguinal method are:

1. Higher ligation of the hernial sac.
2. The structures about the ring are more easily defined and are more accessible.
3. Damaged viscera may be repaired without the necessity of a second invasion.

In conclusion, permit me to emphasize the importance of surgical intervention in all cases of femoral hernia, since the relative occurrence of strangulation and obstruction is quite high. There appears to be little preference as to the method used or by what route one elects to effect a cure, so long as the method accomplishes two rather vital considerations: A high ligation of the femoral sac and obliteration of the femoral ring.

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EFFECT OF DIGITALIS ON ARRHYTHMIAS OTHER THAN FLUTTER AND FIBRILLATION OF AURICLES

Charles W. Barrier, Fort Worth (Journal A. M. A., Sept. 3, 1932), reports that in two cases of supraventricular tachycardia, digitalis was given by vein and was followed by slowing of the rate of the paroxysm and the restoration of sinus rhythm. In one case the effect was supposed to be due to direct action of digitalis on the heart muscle. In the other case the effect was thought to be due to increased vagal tone as the heart under digitalis behaved as when the vagus was mechancially stimulated and because digitalis failed to abolish the paroxysm after the vagus was paralyzed by atropine. In extrasystolic arrhythmia the use of digitalis is occasionally of benefit in relieveing both the disturbing rhythm and the symptoms of heart failure. It will abolish extrasystoles more frequently than the literature would indicate. Cases are reported in which all three types of extrasystoles were abolished. The author believes that digitalis is probably effective through its action on certain factors involved in circus movement.

BURN CONTRACTURES

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Burns should always be considered as surgical problems. If they are thought of apart from their general systemic reactions, they are lesions resembling ordinary wounds, because they produce a sudden break in the continuity of the surface tissues, brought about not by direct violence, but by trauma of a physio-chemical nature.

Much has been written and said relative to the various classifications of burns, as to degree, extent, structures involved, et cetera, but to my mind, David Goldblatt's classification of "scarring" and "non scarring" burns is the most logical. According to this classification a "non scarring burn" would vary from a simple hyperemia of the area without loss of structure, to a more severe inflammation and congestion with the early and rapid formation of blisters. In the "scarring burn," there is a destruction of the whole skin layer usually involving the underlying structures. There is a coagulation of the cell contents, destruction or thrombosis of the blood vessels of the corium, and the inter-cellular spaces are filled with broken down albuminous products. Healing cannot take place until this dead tissue is removed, or allowed to slough away.

With this classification and pathological picture of the two types in mind, one readily sees that there will be no resulting contracture as a result of the "non scarring" burns, unless secondary infection with cellulitis and abscess is superimposed. With the "scarring types" contracture is to be expected.

The time allowed, and the subject assigned for this paper, do not permit a lengthy dissertation upon the treatment of burns, but any discussion of burn contractures must of necessity require some discussion relative to treatment of the burn itself.

I shall not discuss treatment in general, but only that phase of treatment which has a bearing upon contractures. In general, contractures can be prevented, but most text books and works of reference pass very superficially over this phase of treatment. And as a result, we who are attempting to give relief to deformities and contractures, see many of these unfortunates with their disabling contractures and scars. From them can be elicited, as a rule, the history of a long drawn out treatment of the original burn, with numerous and unavailing operations to correct the deformity, and to prevent the recontraction of the scar tissue.

The primary and immediate subsequent treatment of any burn should take cognizance of the possibility of future contractions, and definite plans should be made to prevent their development.

1. The first consideration should be some form of splinting, traction or position, that will mechanically prevent contracture. In burns of the anterior and lateral part of the neck and chin, a felt collar wrapped with gauze is applied to maintain the head in the midline with the chin directed upward. Burns of the axillae and about the shoulders should have the arm kept in extreme abduction to prevent not only contracture, but the possibility of adhesion of the arm to the chest wall; those involving the elbow, wrist, and and fingers, should all have splinting to maintain a position opposite to that of the expected contracture. Burns about the inguinal, femoral and perineal regions require the position of abduction and extension of the thighs, which may even require plaster casts to maintain; those of the popliteal space, feet, ankles, toes, like the uper extremity should be maintained in the normal anatomical position or if deemed necessary, in a position of over correction to that of the forming contraction. With extensive burns the splinting and maintenance of normal position is sometimes a very vexing problem. One of the best methods, I have found in meeting such situations, is the immersion of the individual in a hypertonic saline bath, as advocated by Blair and Brown. It is surprising how an individual writhing in pain, and definitely starting contracture of a part, will relax in the warm saline bath, and the contracture easily prevented by moderate traction. It is my opinion that burns treated by the warm hypertonic saline bath have less tendency to form contracting cicatricial tissue. This procedure is not difficult of administration, nor does it require elaborate equipment. I have been using a wooden box frame, without top or bottom. This is lined with ordinary rubber sheeting. It can be constructed with a head rest, or a cloth swathe across one end for the head to rest upon. It is set upon the bed and filled with saline solution. For covering

and warmth, a craddle with electric lights is used.

2. The second consideration is the early clearing of the burned area of necrotic and sloughing tissue. This may be by actual surgical debridement, or by the use of some antiseptic solution, as Dakin's Then following this with adequate treatment of the burn and whatever method desired that will cause the rapid formation of clean, healthy graunlation tissue.

3. The third and last consideration is early skin grafting to promote rapid closure of the wound and thereby lessen the amount of dense fibrous tissue that would form in an open contracting wound.

These statements sound very elementary and perhaps like platitudes, but I sincerely believe that if they were followed in the treatment of the "scarring type of burns," there would be a decided decrease in the number of burn deformities.

With this discussion of the preventative aspect of the treatment of contractures, we now come to the treatment of the actual contracture. A large per cent of individuals with such contractures have had several attempts made at correction before they reach us. These attempts, as a rule, are not directed at adjusting the entire pathology, but only the superficial part and consequently a recurrence results. Blair early called attention to this and it was his opinion that the first, most important and absolutely controlling step in any restorative operation, was to cut or remove the scar tissue sufficiently to allow the remaining skin and tissues to return to their normal positions. Unless this is done thoroughly, often to over correction, the operation cannot be completely successful. In old standing cases, osteoplastic resections, joint stretching, or tendon lengthening may be necessary adjuncts to simple scar excision.

The scar tissue having been excised and the surrounding skin mobilized, the open area must be closed. The best method is the implantation of normal skin and subcutaneous tissue. This may be accomplished in many ways, but the two favorite and widely accepted methods in use today are, the "pedunculated flap graft" and the "free full thickness graft." They both have definite indications and uses, as well as specific disadvantages.

The "pedunculated flap graft" is especially useful in those cases where blood vessels, nerves, tendons, bones, or joints are openly exposed in the wound, and it is necessary to furnish protection with subcutaneous tissue to these structures, as well as to cover over the epithelial defect. It is especially useful in locations where immobilization with pressure upon the graft is impossible. It can be used in the presence of superficial infection, since it has an adequate blood supply of its own, it can more readily resist and combat infection. The chief disadvantages of this type of graft are, the necessity for immobilization, and the length of time required in transferring it.

The "free full thickness graft" is indicated in freshly prepared clean wounds that require a minimum amount of subcutaneous tissue. The advantages over the "pedunculated flap graft" are, no period of prolonged immobilization, all operative wounds are closed, and thereby the danger of infection from open wounds lessened; and lastly, the operation is complete in one stage.

When the area has been covered, and healing is complete, early physiotherapy is indicated. All the tissues in the neighborhood of the contracture have been weakened by dis-use. A good, patient, masseuse, some form of radiant heat, together with graduated exercise, can aid very materially in restoring the part to its fullest range of function.

This, in brief outline, is my way of treating these conditions. John Staige Davis has very aptly stated that no one rule, or set of rules, can apply in handling these cases, but if a single rule should be set down, it would be the use of extreme carefulness and patience and constant reorganization of therapy.

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DISCUSSION: *Dr. R. L. Murdoch,* Oklahoma City.

Dr. Burton spoke of only two methods of skin graft, but in the slides he mentioned Thiersch grafts also. At Walter Reed Hospital they are also very partial to detached skin grafts. In contractures of the elbow or axilla or something of that sort, they punch a knife into the contracture and then, having gotten a piece of skin, bury that skin into the scar with the skin surface on the outside and the raw surface towards the main point or border. A particularly interesting feature of the detached dermal skin graft into strictures of the rectum, and just recently the American Proctology Society reported some of these cases, where they had used this detached dermal skin graft, and it is a surprising thing that those plaques of skin live even in the rectum, probably because after being buried there it is in sterile tissue, it can't skid after it is placed there, and it has the advantages of normal tissue tension placed on it. It just brings to mind the fact that we use a number of methods, and that there are a number of methods of grafting in skin.

Dr. Burton: There are several methods, but in my opinion, these I have used are the best procedures.

ADHESIONS OF ANTERIOR SURFACE OF LIVER

According to Arthur H. Curtis, Chicago (Journal A. M. A., Dec. 10, 1932), adhesions of the anterior surface of the liver are a not infrequent complication of gonorrheal disease of the fallopian tubes. These adhesions apparently develop during the acute stage of the pelvic infection. The differential diagnosis of pain in the right upper quadrant of the abdomen in women should include consideration of adhesions of the anterior surface of the liver. If the cause of the pain in the right upper quadrant is difficult to determine, a pelvic examination may serve to differentiate. Conversely, in the presence of a pelvic inflammatory mass of unknown etiology, a history of pain in the right upper quadrant, in the region of the liver, may be of material moment in the differential diagnosis of the etiology of the pelvic lesion.

PELLAGRA*

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What is it? An avitaminosis—a symptom complex; a disease due to moldy, rotten maize, or corn, lacking the amino fatty acid—an infectious disease due to the similum reptans, mosquitoes, nematodes —a toxic condition, due to silica or aluminum.

To me, pellagra means an avitaminosis plus something else, usually something surgical. When in New Orleans, in 1915, I heard a lecture at Tulane, in which the lecturer divided pellagra into three stages:

1. The pre-eruptive stage, characterized by neurasthenia.
2. The eruptive stage, and
3. The cerebo spinal stage, characterized by changes in the brain and cord.

I have been to many meetings since, but have never heard it classified that way. During the war, I met Dr. Robert L. Benson, formerly Assistant State Bacteriologist for the State of Florida, now bacteriologist for the City of Portland, Oregon. His theory was, that pellagra was always complicated with some surgical condition, or followed the acidosis of some severe illness or disease.

The following cases in my opinion lead me to believe that his theory is worth careful consideration and study.

Case No. 1. Seen in 1910 at All Saints Hospital at McAlester; a man about 55 years of age, who had had a recent amputation above the knee, was found one morning to have developed many bright red macules on the back fore-arm. These resembled mosquito bites. These coalesced, and in a few days a typical pellagrous erythema covered the dorsal surfaces of both fore-arms.

Case No. 2 Mrs. L. W. D., a multiparae, who had been sick for months. When I saw her, she had a typical erythema, which gradually grew dark and changed to a dirty, rough, chapped condition. She had a very marked diarrhoea, and was ataxic. Besides pellagra she had extensive lacerations of the cervix and perineum. This family had mosquitoes,

*Read before the Southern Oklahoma Medical Association at its Semiannual Session at Atoka, Oklahoma, on December 10, 1931.

nats and bed bugs in abundance to contend with. However, they had chickens, eggs, milk and butter and the pellagra was evidently due not to not having food, but being unable to eat same. Patient developed paralysis of the bladder, became insane and died.

Case No. 3. A woman with extensive cervical and perineal lacerations.

Case No. 4. Had pyelitis complicating.

Cases Nos. 5 and 6. Were men above 60, whose pellagra followed lobar pneumonia. One of these cases had one dose of salvarsan intravenously, and was later put on Fowler solution to point of tolerance. He recovered completely and lived eight years.

Case No. 8. Pellagra followed lobar pneumonia. Patient had extensive pyorrhea and chronic gastritis. I gave this man a prepared creosote mixture, the first dose of which made him feel like he had swallowed a little undiluted fire.

Case No. 9. A woman with pellagra and pyelitis, which she thought due to water in a shallow, sandy well.

Case No. 10. A woman living in filth, flies and food deficiency. This woman had two small children with pellagra.

Case No. 11. Mrs. W. R. S., recovered from pellagra under cacodylate of soda. This recurred two years later, at which time she had pyelonephritis and necrosis of the lower jaw bone, the removal of which might have prevented the recurrence.

Case No. 12. Had pellagra and gall stones; well to do, and plenty of food.

Case No. 13. Had food deficiency, and a few malarial chills; one of her children developed pellagra. Quinine and diet and sulpharsphenamine cured her. Since her recovery she has had normal labor and is well.

Case No. 14. This patient had a very marked diarrhea. Was extremely emaciated, and I felt that he would die within three months. Gave him twenty-five doses of sulpharsphenamine; gave him opiates and bismuth for his diarrhea, and put him on a proper diet. He is still living, with no evidence of pellagra at the present.

Case No. 15. Age 33; 7/8 Choctaw; married, mother of three children. Father died of alcoholism; mother died following a miscarriage. Usual diseases of childhood, and small-pox. Health good until June, 1931, when her appetite began to fail. Weakness, sense of weight on chest; had to take deep breaths; (air hunger) marked tenderness over the gall bladder, and unable to eat. Appetite grew steadily worse. Usual weight 100; present weight 86 pounds and below. This patient's appetite continued very poor, and she was unable to eat very much food of any kind, developing a degree of starvation acidosis. She had periods of great weakness, thinking she was about to die, but would be better when I arrived. September 20th, I found the typical erythema of pellagra.

In my opinion enough stress has been laid upon diet, but not enough consideration given to the complications which accompany pellagra. Many of the patients I have seen needed surgical operations to enable them to eat without pain; and a balanced ration. In my experience pellagra has always followed some severe illness or acute infection, during which a patient developed a starvation acidosis.

The third stage resembles pernicious anemia in many respects, and I notice in reading the pathology, combined sclerosis is mentioned. A brief description of acidosis and pernicious anemia is helpful in classifying the existing chaotic status of this symptom complex. Acidosis is described as follows:

ACIDOSIS

Hypo-Alkalinity of the Blood. Acidosis denotes a diminution in the alkali reserve (chiefly bicarbonate and phosphate) of the blood. As acids appear in the body, either as a result of normal metabolic processes (producing especially H2CO3) or of disease or indigestion, they are neutralized by alkalies, the resulting salts being eliminated mostly in the urine and the CO2 via the lungs; HCl+NaHCO3—NaCl +CO2. The red blood cells, probably by virtue of their haemoglobin, can take up and bind acid and form bicarbonate according to the following reversible reactions: H2CO3+NaCl—HCL+NaHCO3.

The HCl is retained in the cell; and the CO2 is excreted in the lungs and NaCl reformed. Diacetic and B-oxybutyric acids arise from the incomplete oxidation of fats and the amino-fatty acids of the protein molecule, as in diabetes. Lactic acid arises from the incomplete oxidation of carbohydrates, as in excessive muscular exertion, pneumonia, rebreathing of expired air, carbon monoxide poisoning, and severe anemia. The acidosis of nephritis is due to the retention of acid phosphates.

The acid-base equilibrium of the body is maintained by (1) the buffer action of the sodium bicarbonate, sodium and potassium phosphates and protein of the blood, whereby additional acid or alkali may be taken up without changing the actual acidity or hydrogen-ion concentration (q-v.), as illustrated by the following equation: Na2HO4 + HCI=NaH2PO4 + NaCI; (2) the production of ammonia from urea; (3) the elimination of acids by the kidneys; and (4) the elimination of carbon dioxide by the lungs from its union with sodium bicarbonate. Carbon dioxide in the blood stimulates the respiratory centre and thereby promotes its own elimination.

In acidosis the carbon-dioxide tension in the alveolar air is diminished, owing to increased ventilation of the lungs, due to stimulation of the respiratory center. The normal tension is about 40 mm.; a tension below 35 mm. means acidosis; 20 mm. indicates danger. Morphine raises the tension; caffeine, by stimulating respiration, lowers it. The symptoms of acid intoxication, are dyspnoea (deep breathing of the "air-hunger" type, or a cyanotic hyperpnoea, due to increase of CO2 in the blood), indigestion, burning pain in the pharynx or epigastrium, nausea, vomiting, lassitude, various nervous manifestations, headache, increasing drowsiness, and finally coma.

The causes of acidosis are: Diabetes mellitus; *starving from any cause, as* rectal feeding, oesophageal stenosis, etc.; non-carbohydrate diet; incomplete oxygenation of the blood, as in pneumonia, emphysema, tuberculous pneumothorax, mountain sickness, CO poisoning, cardiac insufficiency, dyspnoea from any cause; certain toxic conditions of the liver, as in cyclic vomiting of pregnancy, hepatic cancer, acute yellow atrophy, portal cirrhosis, eclampsia, and phosphorus and chloroform poisonings; salicylate poisoning; cyanide poisoning; thyrotoxicosis; nephritis; severe sepsis; severe diarrhoeas of children; severe burns, cholera; kala-azar; heat stroke; deep ether anaesthesia; shock.

The normal pH of the blood is between 7.3 and 7.5 (7.4 is the pH of water). At or near 7.0 coma occurs, and beyond 7.8, symptoms of tetany. The hydrogen-ion concentration depends upon the ratio of dissolved carbonic acid to bicarbonate, e. g., (H2CO2) over (NaHCO3), normally 1-20, or 1.20. The greater the proportion of H2CO3, the greater the hydrogen-ion concentration and the lower the pH, and vice versa. But the blood holds the normal ratio with extreme tenacity. As long as this ratio is maintained, a potential acidosis is said to be compensated; otherwise it is a decompensated acidosis.

From case No. 15, and my cases, which have been preceded by lobar pneumonia, and other infectious diseases, I am forced to conclude that starvation acidosis is a major factor in the first two stages of pellagra. This is gradual and insidious; it accounts for the air hunger seen, and throws metabolism out of balance.

This leads me to believe that potential acidosis, long continued, and due to starvation from the avitaminosis (due to poverty, or gastro-intestinal gynecological genito-urinary affections) eventually becomes decompensated, and when this occurs, hydrolytic cleavage of the carbohydrates and suboxidation of proteins and fats, are responsible for destructive changes in the blood cells, and (particularly the R. B. C.) and neurotoxins elaborated, which by their effect on the spinal and sympathetic nervous systems produce the pellagrous erythema.

Lack of vitamin A produces sore eyes, and blindness in the Eskimo.

Lack of vitamin D produces rickets and distortion of the osseous system in children.

Lack of antineuritic vitamin B2 in rice produces beri-beri in the Japanese and Chinese.

These facts lead me to believe that acidosis is a major factor, and if long continued leads to a severe anemia eventually showing some of the ear marks of pernicious anemia, e. g., combined sclerosis.

The three A's—acidosis, avitaminosis and anemia should all be considered instead of only the A of avitaminosis.

Hydrochloric acid is practically absent in pernicious anemia according to the Mayos.

In typhoid fever and lobar pneumonia if we fail to feed our patients (which I do not), we soon see every evidence of acidosis, and the patient is soon forced to live on his own tissue proteids, carbohydrates and fats, hydrolytic cleavage may be retarded or incomplete, and the suboxidation of proteids might lead to some by-

products between the acids, albumins and the peptones getting into the blood.

The diagnosis of pellagra is usually made from the typical erythema which is symmetrical, and resembles sun burn; is on exposed surfaces and is usually a duller red than erysipelas or sunburn. This progressively becomes darker until a dirty back chapped appearance is seen. At times the eruption is macular.

The pre-eruptive diagnosis is seldom made, but the following symptoms should cause us to think of pellagra.

1. Symptoms of neurasthenia and starvation acidosis—such as air hunger, collapse, great weakness, cardiac distress.

2. Symptoms which would suggest an incipient Tbc., but afebrile, and with a negative lung examination.

3. The history of an acute severe illness during which millions of R. B. C., were destroyed, as in acute malaria and lobar pneumonia, where the oxygen carrying cells were diminished and the CO2 increased.

4. The history of indigestion, due to gall bladder infections, appendicitis, genito urinary infections, etc., which bring on a starvation acidosis, which, coupled with a food deficiency, either due to poverty or digestive weakness, and which leads to anemia.

TREATMENT

1. The relief of starvation acidosis by diet or by surgery's removal of the surgical entity interfering with digestion.

2. The removal of infected teeth, drainage of the sinuses.

3. The eradication of malaria and intestinal parasites.

4. The control of diarrhea by opiates and bismuth.

5. The administation of sulpharsphenamine in 0.4 and 0.6 gram doses, which has in my estimation halted pellagra cases in which cerebro spinal symptoms were present.

6. Balanced diet after infection has been removed, and the conditions which interfere with hydrolytic cleavage of carbohydrates, and suboxidation of the proteids due to hypochlorhydria, lack of bile —pepsin, etc., are removed.

We must take into consideration every factor concerned in proteid carbohydrate and fat digestion—remove every obstacle interfering with same—relieve the anemia with iron and arsenic.

Pellagra in my opinion has more than the one A—that of avitaminosis. It has three.

1. Acidosis.
2. Avitaminosis.
3. Anemia.

The division of pellagra into three stages, and the consideration of the two others, H-C acidosis, and anemia, ought to lead to earlier diagnosis.

—o—

EXPLOITATION OF THE MEDICAL

Everywhere it is rampant—newspapers, magazines, billboards, radio. "Your doctor will tell you that . . . ." "Medical science has found that . . . ." "The greatest specialists in Timbuctoo say that . . . ." And the rest of the story is, of course, "Use our pills or our vitamins three times a day; ask your doctor."

You are forced to compete with those who offer your patients free advice regarding medical treatment. You deliver Mrs Blank's baby today, and tomorrow she will receive by mail samples of baby foods with complete directions how to use them. Indeed, some physician representing a commercial organization and knowing that the case is in your hands may address a personal letter to your patient offering his services free.

It has been said that ten more years of the present trend of interference in medical practice will do away with the need for private practice of infant feeding and other branches of medicine.

Mead Johnson & Company have always believed that the feeding and care of babies and growing children is an individual problem that can best be controlled by the individual physician. For over twenty years and in dozens of ethical ways we have given practical effect to this creed. We hold the interest of the medical profession higher than our own, for we too, no doubt, could sell more of our products were we to advertise them directly to the public.

So long as medical men tacitly encourage the present trend, so long will serious inroads continue to be made into private medical practice. When more physicians specify Mead's Products* when indicated, more babies will be fed by physicians because Mead Johnson & Company earnestly cooperate with the medical profession along strictly ethical lines and never exploit the medical profession.

*Dextri-Maltose Nos. 1, 2, and 3; Dextri-Maltose with Vitamin B; Mead's Viosterol in Oil 250 D; Mead's 10 D Cod Liver Oil; Mead's Newfoundland Cod Liver Oil; Mead's Cereal; Mead's Brewers Yeast Powder; Mead's Powdered Lactic Acid Milk Nos. 1 and 2; Mead's Powdered Whole Milk; Alacta; Mead's Powdered Protein Milk; Casec; Recolac; Sobee.

PUBLIC HEALTH OR STATE MEDICINE*

W. G. RAMSAY, M.D.
QUINTON

There are calls coming from all parts of the country for more and better medical facilities. These calls are coming very faintly and in minor strains now but before long the calls will be in demanding tones and for radical measures. Expressions are too numerous and too positive to be ignored and the wily politician and demagogue are too alert to allow any fertile field to go unoccupied.

There is a movement known as state or social medicine which is spreading over the civilized countries. Being now in operation in twenty-two different governments and considered by several others. Several of our American states have had bills introduced which, if becoming law, will constitute what seems to me a very one sided and vicious form of socialistic or paternal government.

Before going into the discussion very far, however, let us get our ear close to the ground and try to appraise the potential tendencies. How the evolutionary processes develop from one degree to another in an insidious and steady manner until when we awake we are swept very far into or across the Rubicon.

A few years ago we thought nothing of industrial insurance. It seemed quite plausible and a step well taken. Now we hear agitations for old age pension. We are sorry for the old and destitute. We are glad to see them cared for. It will probably be handled on the insurance plan with the state as administrator. What of that? It is just another straw blowing in the direction of state paternalism.

Now the doctors are leaving the country and villages for the cities. Something will have to be done to care for the people so deserted. Dr. Hugh Cabot, at the late Oklahoma City conference, said "if the doctors did not meet the situation the law makers would solve the problem for them." Dr. Bizzell at the same conference said "the lay view of the profession was that the doctors were more interested in curing than in preventing disease." This I believe is true but the reason is obvious. People are anxious for our advice when they are sick but care nothing for it when well. Dr. Bizzell's talk was timely, for it is always good to see ourselves as others see us, but I do not believe Dr. Bizzell fully understands the many sacrifices that have and are being made by the profession for the promotion of public health.

With our ear to the ground what rumblings do we hear? What agencies do we find at work?

1. The National Tb. Association.
2. American Heart Association.
3. Cancer Commission.
4. U. S. Public Health Service.
5. American Child Health Association.
6. Army and Navy Public Health Service.
7. Bureau for the promotion of Health of Maternity and Infancy.
8. Committee of 45 to study the cost of medical care.

The last is a fact finding body with a million dollars subscribed to defray the expenses of the committee and from some of their preliminary reports the final will, I am convinced, amount to about as much as the Wickersham Committee, with my sincere appologies to Mr. Wickersham's Committee. In addition to these there are literally hundreds of others, locally and otherwise too numerous to catalogue here.

What does all this mean? It means just what any multiple of remedies always means, that is, that there is really no effective remedy for the malady. And it means too that they are all straws blowing in the same direction. These eight agencies are all national, wholesome, earnest, and smoothly working organizations with definite objectives, for the education, promoting the health, prolonging the life and making a better people, but what I want you to get is that there is a definite health consciousness, a desire on the part of the people to do more, an uneasiness or solicitude for the health of the public and a desire or disposition of the state to do it's part as evidenced by the State Industrial act. The Crippled Children's act, the fundings for the care of the poor sick adults and the hospitalization and care of the tubercular. All of which is well and good, but calling on medical statesmanship, for guidance.

Now what shall we have? Shall it be

*President's address of the Southeastern Oklahoma Medical Association, delivered at the Semi-Annual Meeting at Atoka, Oklahoma, December 10, 1931.

socialistic medicine or public health? But first, let us see what state medicine is doing and leading to, in two of the twenty-two countries now operating this system. Just a glance at England and Germany is all there will be time or need for study in this paper.

The English system has been in operation now twenty years. It is largely an industrial country and is much more workable on that account. About 38% of the entire population is covered with this form of insurance. The employer pays 3-7, the employee pays 3-7, and the government pays 1-7, in addition to administration expenses. The whole amounts to about $2.60, per capita, per month, which is accumulated into a fund from which is paid the doctor's fee, the medicine bill, and compensation for loss of time from sickness or accident. The average fee for a doctor's visit is about fifty cents and other services in proportion. This too, is all very well if all are happy. What makes a doctor happy? A large income just the same as other folk. How does he increase his income? By catering to his clientele—just human. He writes lots of prescriptions, sees 40, 50, or a hundred patients a day, certifies them sick every time they want to go fishing, play cricket or just draw compensation and rest. What has happened? Sick benefits increased from 41% to 159% in five years. In 1929, of the 15 million insured, nearly half a million were charged with and sent to a regional center for malingering. Of those summoned, about 65% refused to be examined and gave up their insurance, and of the 35% examined, only about 11% were found unable to work. Would America like this? Doctors prostituting their ancient and honorable profession by certifying to sickness, just to please their patients, and the people degrading themselves to dirty malingers? It may suit us when the spirit, independence and morale of the American people have completely broken down.

In Germany the situation is quite similar; 32% of the population are insured and is compulsory in all cases when the income is $900.00 or less. The malingering is equal to that of England, or worse. In one year, of eight million patients treated, one million three hundred thousand were sent for control examinations and of that number less than ten per cent were found to have been disabled. In one case, where fifty employees were laid off, forty-nine of them had sick certificates the next day. It is said that the doctors' time is taken up in writing certificates, making records and addressing communications to the various committees connected with the system, that they seldom make an examination and that the profession has deteriorated to a very low level. In spite of this it is said that many of the doctors, and I suppose the public too, are quite content. The doctor is sure of his fee, makes more money because he sees fifty or a hundred patients a day and all he has to do is use his pencil.

Public health, on the other hand, as it is intended to function, is educational in its broadest sense. The people are taught to help themselves by preventing disease and if given full public support can eliminate a large part of the infectious diseases. The people can get a measure of advice and consultation without impairing their dignity or degrading and humiliating them. If all the different associations, commissions and committees were concentrated in the U. S. Public Health Service, completely organized in every county, district or city, and then given sufficient help in the office and field so that regular contact could be made with each community or school district, every requirement could be met. The children in school could be taught the value of hygiene and sanitation. The difference between reasonable and unreasonable practices, necessary and unnecessary, and that disease is a reality, a consequence of natural laws, which cannot be prayed away, rubbed away or cured by faith. There should be sufficient nurses, depending on the size of the district, and in case of the very poor, to advise whether to call a doctor or not, administer prophylactics, advise and report cases of infectious diseasees. In case of the very poor, she could, and does advise the public health officer, and if not the very poor, advises them to call the family physician. The U. S. Public Health Service is now in operation in forty-five states. Massachussetts, Connecticut and Illinois, still refuse to cooperate. It must be granted that it is not operating perfectly and at the very best there is much to be desired. It also has some very powerful critics and hundreds of less powerful. Dr. Robert Hutchison, speaking before the Canadian Medical Association at Winnipeg, in 1929, claimed "that the old ignorance about the body and stolid resignation to its ills was probably the more healthy attitude and certainly a happier one than our modern

curiosity and our anxiety." He claims "that the modern pursuit of health has developed several kinds of hypochondrias. That many have developed a fear complex. That mothers have developed a vicarious hypochondriasis through over anxiety regarding the health of their children," and his final verdict is "that one need not specially concern himself about his health until he feels that something is going wrong."

Again, Dr. Gerry Morgan made a similar comment at the A. M. A., meeting at Detroit. He speaks deploringly of the long list of agencies—"medical, quasi-medical, and plain non medical." He says "in looking through this long list of agencies one is constrained to ask what has come over the people." He says "that we are told that mothers have been educated in the care of their children until they are stampeded by the multiplicity of direction." These conclusions, it seems to me are not fairly reached. People are, many times, made nervous by mercenary medical men. Designing doctors, I am sorry to say, do play upon the nerves of mothers. Certainly you will all agree that this fact is often brought to our attention—plain misinformation—eminating from some member of our own profession. People are not stampeded by demonstrated truths, nor are people stampeded by information given by Public Health Agencies. I do not believe that these two learned gentlemen, or any other fully informed person, would be willing to be uninstructed regarding the dangers of the fly or the mosquito. They would not want the people to think that the children would "out grow" their adenoids and rickets, or that "growing pains" in children should be ignored. That tuberculosis is inherited or that malaria was just the effect of bad air. They would not have people think that sickness was a curse specifically sent to plague mankind or that lightning and thunder were an expression of the wrath of an avenging God.

In fact people are not going back to those dark days of stolid resignation. They have been educated in logic to a point where they demand a reasonable explanation and the public health agencies, freed from mercenary and designing interests is the solution.

It will take statesmanship. it will take sacrifice, determination and continuous effort. In this connection I want to pay tribute to our Oklahoma Dean, Dr. LeRoy Long, for his uncompromising challenge, for his sacrificing a cherished and honorable office rather than allow discredit to rest upon the school or students he loved. We must not expect, however, that this sacrifice will immediately be translated into a changed Oklahoma law. It may take many more sacrifices, but most of all it will require the teaching of the youth. We have been admonished to "be not weary in well doing." Much valuable time has been lost in the past by lack of system and cooperation. An instance; small pox vaccination is now 210 years old, discovered in America, and yet America is the last to be convinced. This brings to our minds another sacrifice—Drs. Boyleston and Mather enthusiastically advocated small pox vaccination and for their labors they were reviled and rebuffed. Their homes were bombed and attacked by mobs. This was really the birth of preventive medicine, but they did not live to see their sacrifices bear fruit. Another sacrifice worth mention is that of Dr. Robert Knox of England, who, in order to procure anatomical subjects for his students was driven to the exremity of accepting murdered victims from the hands of thugs. He was tried for his life and acquitted but yet he was made a living martyr. He was exiled in his own home, humiliated and disgraced. He went on the streets only in disguise and the world lost a great teacher of anatomy. At that time only executed criminals were available for dissection but the reaction eminating from this episode tipped the scales and two years later the British Parliament provided for sufficient subjects for the teaching of anatomy and thus was laid the foundation for our anatomical associations.

It is to be regretted that it took so tragic an episode as this to awaken the law makers, but the law makers, after all, are only the reflection of public opinion and public endeavors. When the public is taught the laws of health along with other natural laws, when they see that health agencies are divested of all selfishness and commercialism, they will listen to them, rather than to every quack, who has broadcasting facilities.

I am not hoping for a perfect panacea but am trusting that socialistic medicine will not be thrust upon us in such a manner that our American spirit will be forever broken down.

DIVERTICULUM OF URINARY BLADDER

BASIL A. HAYES, M.D.
OKLAHOMA CITY

It is my impression that this case is among the first of its kind to be operated upon in Oklahoma City. Even though there may have been others, however, it is sufficiently interesting to report, because it illustrates diagnostic errors which are commonly made.

Case. Tony B., aged 52, white male, in fair general condition, came to my office during the first part of November, 1927. He complained of frequent and painful urination, and stated that his urine was "dirty" and smelled bad. These symptoms had been gradually growing worse over a period of two years, during which time he had been examined and treated for varying periods by many different urologists. Treatments had consisted of prostatic massages and bladder irrigations. In each case he had been advised to have an operation for prostate trouble.

Examination at this time showed some tenderness over the right supra pubic region, urine loaded with pus and mucus, alkaline in reaction, and of putrid odor. The prostate was normal in size to digital examination. Otherwise his physical examination was negative.

Several irrigations failed to improve his condition. He was then admitted to the hospital, coming in November 28, 1927. Cystoscopic examination showed a marked deformity of the trigone, as if something was underneath, pushing it and the whole bladder floor upward and forward. Both ureteral orifices appeared normal. There was a large opening, ½ inch in diameter, located above and behind the left orifice, and currents of debris-laden urine could be plainly seen flowing back and forth through it. No other abnormalities were observed. The bladder was then filled with 8% sodium iodide solution and X-rayed, showing a sacculated diverticulum lying in the posterior quadrant of the pelvis. A retention catheter was placed with some difficulty owing to the deformity of the trigone. Irrigations twice a day and free drainage soon improved the quality of urine until it was deemed safe to operate. On December 7th, after consultation with Dr. John Riley, operation was undertaken and the diverticulum was removed by first dissecting it loose from surrounding structures, then opening the bladder, inverting the sac, excising it, and closing the opening by two layers of stitches. A one inch drainage tube was left in the bladder and a soft rubber drain was placed outside, leading down to the cavity from which the sac was dissected. The patient's pulse was 72 at beginning and 110 at close, running up to 130 before he reached his room. The post operative course was perfect, fever going to 100 degrees for the first three days, after which it dropped to normal and so remained. The external drain was removed the fifth day. The bladder drain came out the tenth day, and the patient sat up on the fifteenth day. He left the hospital on the eighteenth day, and is now attending to his business. He feels fine and has gained weight.

COMMENT

Symptoms. It will be noted that this patient's symptoms were the classical one of urinary tract obstruction: viz., — frequency, straining, and pyuria. Some authors describe double urination or a fresh gush of urine occurring after the patient thinks the bladder is empty. This was not observed by this patient. He did have, however, marked decomposition of the urine, giving rise to a foul ammoniacal odor. He also had tenderness only on one side of the supra pubic region, which was later explained by the fact that the bladder had been pushed over to this side by the tumor. I have not seen in the literature any reference to this disgnostic point.

Diagnosis. In a case of this kind, several things present themselves to the mind of the examining surgeon. *Posterior urethritis* of gonorrheal origin can be ruled out by the absence of discharge or history of recent infection, by the lack of prostatic tenderness or of positive smears.

Intra-vesical enlargement of the prostate is eliminated almost at once, when repeated washings of the bladder fail to make the solution return clear. This almost always indicates that there is a communicating cavity which feeds pus into the bladder. Prostate bulging can be further eliminated by bimanual examination —placing a sound in the urethra and a finger in the rectum. In this way bulging lobes can be outlined just as enlargements of the uterus or adnexae are felt by the gynecologist. *Abscess* in the bladder wall can sometimes be confusing and I have seen two cases in which the pathology was quite similar to a diverticulum. In abscess,

however, there is usually great tenderness accompanied by acute symptoms such as high fever and leukocytosis. In this, too, bladder capacity is quite diminished, while in diverticulum it is increased. *Pyonephrosis* is almost always accompanied by marked tenderness over the affected kidney, the decomposition of urine is not marked, and the patient is more acutely ill. In this, barring bladder complications, the urine is practically always acid, while in diverticulum it is nearly always alkaline. Cystocele may be diagnosed in women sometimes when the real condtion is a diverticulum presenting in the vagina. Kelly and Burnham report such a case. In every instance, after clinical signs and symptoms have been studied out the diagnosis should be verified and amplified by the cystoscope and X-ray, though sometimes, as in rectal fistulae, the opening is so small that it cannot be seen even with a cystoscope.

Causation. Diverticula, while rare in women, do occur to the extent of 6% of reported cases. Their usual appearance, is in men from 50 to 55 years of age, though cases have been seen in patients ranging from 10 to 80. They are customarily classified into congenital and acquired; the congenital ones being those arising from a patent urachus or a ureteral bud. The majority of writers feel that while congenital defects may assist in the formation of these structures, the only real congenital ones are those arising from incomplete closure of the urachus. Dr. Young suggests that congenital obstructions of the urethra in infants and young children may account for many cases which later are hard to explain. In line with this it may be stated that my patient had a small meatus for many years, and had a meatotomy done several years ago. It seems fairly certain that some type of obstruction must be present in order to produce this trouble. Young and others have actually observed the formation of cellules on over-distention of the bladder. More recently Rose has worked out by means of his cystometer the exact pressures at which diverticula develop. He finds that the point of greatest strain in a distended male bladder is the border of the trigone. Here the muscle bundles are largest and the interstices widest. At this point the muscles receive their attachment, thereby lessening the elasticity of this area. He also states that there are more fibrous tissue pathways here than elsewhere. He overfilled the bladder of a normal youth to the point of spasm and found "sharp outstanding muscle bundles bounding open-mouthed cellules, some surprisingly deep, when the spasm was at its greatest." This condition disappears toward the dome of the bladder and the lateral walls, as the muscle bundles these are more finely divided. These findings correspond to the cystoscopic appearance of any trabeculated bladder. In brief, Rose's conclusions are that a congenital fibrous pathway must be present through the bladder wall, which is later herniated by increased intracystic pressure. This pressure can be raised by any sort of obstructive uropathy; and after once herniating through the muscular wall the diverticulum will continue to grow even though the obstruction be removed.

Complications. Diverticula may cause serious complications in addition to the bladder disturbances commonly seen. Infection always supervenes and this may cause abscess, cellulitis or rupture into the peritoneal cavity. Pressure on the ureter may bring about hydronephrosis or pyonephrosis or chronic nephritis of any type. Pressure on surrounding nerves and vessels may cause pain which cannot be otherwise explained.

Treatment. Treatment of this condition may be for convenience divided into palliative and curative measures. Under palliative may be mentioned all those procedures which tend to relieve infection and irritation, such as bladder irrigations, urinary antiseptics and free drainage. It is easily possible to introduce antiseptic solution directly into the diverticulum by means of a ureteral catheter. Sometimes even the cystoscope itself can be pushed through the opening, the interior explored, small stones picked up, etc. These methods are good, however, only for temporary relief or to build up a patient for subsequent operation. Probably the most satisfactory way is the one used in the case; viz, a retention catheter and daily washing through it.

Under curative treatment I name the various operative methods devised for doing away with the tumor. One of the simplest of these is to enlarge the orifice so as to obliterate the partition between the two cavities, thus ensuring proper drainage. The bladder is opened and two hemostats are placed so as to clamp the walls of the bladder and diverticulum downward from the opening. This wall is then incised between the hemostats and

the edges whipped over to stop bleeding, thus removing a V-shaped portion of each wall and enlarging the diverticular opening correspondingly. The enlargement may be upward as well. Another palliative operation is to marsupialize the diverticulum to external skin and then to attempt to close the bladder opening. Still another method is that of Iousson, who sterilizes the interior of the cavity with a strong solution as iodine or formalin then closes the bladder wall tightly, trusting that the sacculation will be eventually absorbed in scar tissue. All these methods are mentioned merely for condemnation, as in my judgment they are dangerous, unsatisfactory and unsurgical. The only correct way to get rid of a diverticulum is to remove it entirely and close the opening through which it came, as was done in this case.

There are three principal ways of removing diverticula. One is to dissect them out externally and close without opening the bladder. This is very difficult to do in large diverticula though it might not be in small ones. Lower has modified this method by opening the bladder and packing the diverticulum full of gauze, thereby forming a solid tumor which can be dissected out much easier. Another way is that of Dr. Hugh Young who opens the bladder and pulls the sac inside by suction, by clamps, or by dissection, then amputates the muscous membrane and closes the opening. Again it seems to me that this would be easy in small sacs but very hard in large ones. A third method is that of Van Dorn, who locates the sac, cuts through the bladder wall until he reaches its neck, cuts this across and finishes his dissection afterwards. In my own case I combined the first two methods, i. e., I dissected out the sac externally as far as possible, then opened the bladder, inverted the diverticulum and amputated it. This was done to facilitate dissection of the extreme lower end of the mass which was beneath the trigone and lying directly upon ureters, seminal vesicles and rectum. By sticking close to the wall of the tumor none of these structures were seen and happily none were injured.

Summary. This is a report of a case of bladder diverticulum, which had been mistakenly treated as prostatic enlargement for several years. A brief resume of the symptoms, diagnosis points, and various methods of treatment is appended.

THE PRESENT STATUS OF CORONARY DISEASE*

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The study of mortality statistics over a period of years brings to light the fact that the number of deaths due to disease of the heart is continuously increasing. Among the causes of death, disease of the coronary arteries is in undisputed lead. Thus, in this chapter of American medicine is written a challenge that cannot be disregarded, and in accepting it we also accept the responsibility of thoroughly familiarizing ourselves with coronary disease, so that the many unsolved problems of today may be suitably answered tomorrow.

An idea of the magnitude of the problem is gleaned by analyzing the results of a recent survey of records of 3,354 postmortem examinations made at The Mayo Clinic[a]. The patients were of all ages, and death resulted from many causes. The degree of coronary sclerosis was carefully noted and graded on the numerical basis of 0 to 4, 0 indicating complete absence of sclerosis, and 4, extremely marked sclerosis.

It is significant that in only 499 cases (14.9 per cent) were the coronary arteries found to be entirely free from sclerosis (table 1). In approximately half the cases (1,881, 56.1 per cent), there were such minor degrees of coronary sclerosis (graded 1), that they could be considered negligible so far as the patients' well being was concerned. The involvement was moderate (graded 2) in 677 cases (20.1 per cent) and unquestionably played a part in impairing cardiac efficiency in many cases. The degree of coronary sclerosis was marked (graded 3) in 254 cases (7.6 per cent) and extremely marked (graded 4), in forty-three cases (1.3 per cent).

Thus, in these 3,354 routine postmortem examinations, moderate (graded 2) to extreme (graded 3 to 4) coronary sclerosis was found in 974 cases (29 per cent). Instances of extreme involvement were disclosed as early as the third decade of life.

This study, furthermore, reveals that in general more marked degrees of coronary sclerosis occur among males than among

*Read before the Oklahoma City Clinical Society, Oklahoma City, Oklahoma, October 31 to November 3, 1932.

females. The incidence by sex in the entire group was approximately 2 to 1, 2,139 males (64 per cent) and 1,215 females (36 per cent). Proportionately there were more females without coronary sclerosis, 19.8 per cent, as opposed to the incidence of 12.1 per cent of males (table 2). Among 734 males (34.3 per cent of 2,139) the degree of coronary sclerosis ranged from 2 to 4, whereas this range of distribution occurred among 240 females (19.8 per cent of 1,215).

TABLE 1

DEGREE AND INCIDENCE OF CORONARY SCLEROSIS IN 3354 NECROPSIES

Age Groups	Cases	Per cent	Cases				
			Grade 0	Grade 1	Grade 2	Grade 3	Grade 4
0- 9	249	7.5	215	34			
10-19	131	3.9	64	67			
20-29	216	6.4	49	164		3	
30-39	417	12.5	54	327	32	3	1
40-49	659	19.6	67	451	122	19	
50-59	776	23.1	47	458	203	56	12
60-69	655	19.5	3	307	228	106	11
70-79	218	6.5		67	83	53	15
80-89	31	0.9		6	9	12	4
90-99	2	0.1				2	
Total	3354	100.0	499	1881	677	254	43
Per cent			14.9	56.1	20.1	7.6	1.3
					974-29.0 per cent		

During the last two decades knowledge of coronary disease has been greatly broadened, and the more general appreciation of its practical clinical significance has added new vigor to the investigation of the anatomy, physiology, pathology and clinical aspects of the coronary circulation.

ANATOMIC DATA

Fifty-one years have elapsed since Conheim expressed the view that the coronary arteries are end arteries. This postulate was generally accepted by the medical profession until the studies of Spalteholz in 1906, and of Hirsch in 1907, proved the contrary.

Gross, in 1921, by means of roentgeno-

TABLE 2

DEGREE AND INCIDENCE OF CORONARY SCLEROSIS OCCURRING IN 3354 NECROPSIES ACCORDING TO SEX

Age Groups	Males					Females				
	Grade 0	Grade 1	Grade 2	Grade 3	Grade 4	Grade 0	Grade 1	Grade 2	Grade 3	Grade 4
0- 9	110	21				105	13			
10-19	30	34				34	33			
20-29	26	101				23	63		3	
30-39	32	205	25	3	1	22	122	7		
40-49	36	264	92	13		31	187	30	6	
50-59	23	267	136	46	10	24	191	67	10	2
60-69	2	196	165	84	9	1	111	63	22	2
70-79		54	70	49	14		13	13	4	1
80-89		4	7	6	2		2	2	6	2
90-99				2						
Total	259	1146	495	203	36	240	735	182	51	7
Per cent	12.1	53.6	23.1	9.5	1.7	19.8	60.4	15.0	4.2	0.6
			734-34.3 per cent					240-19.8 per cent		

grams of specimens injected with opaque material, clearly demonstrated the extensive distribution of the arterial coronary circulation, namely, the overlapping, distribution of the right and the left coronary arteries, and the arterial supply of the valves and subendocardial structures.

Spalteholz, in 1924, published his monograph on the coronary circulation, which summarized knowledge of the subject up to that time. Oberhelman and Le Count in the same year commented on the variability of the degree and extent of anastomosis of the coronary arteries, present under normal conditions but even more marked in the presence of disease.

Probably the clearest exposition of the anatomy of the coronary circulation is found in Whitten's[20,79,77] celloidin — corrosion specimens made at The Mayo Clinic. The material injected was colored to facilitate distinguishing the structures. The celloidin injected into the right coronary artery was blue, that injected into the left coronary artery was red, and that injected into the coronary veins and into the chambers of the heart was white. I shall not attempt to consider Whitten's work in detail, but only the more important and original facts that were disclosed.

Whitten demonstrated that the right coronary artery supplies the major portion of the posterior surface of the left ventricle, and a portion of the interventricular septum. The right coronary artery, very soon after its origin from the aorta, enters the coronary sulcus, the groove between the right auricle and the right ventricle, and continues to the posterior surface of the heart. Smaller branches are given off at intervals as the artery passes around the right surface of the heart, their general direction being toward the apex. Where the right coronary artery passes the posterior interventricular sulcus a large branch is given off, that is, the posterior descending branch, which continues downward to about two-thirds to three-fourths the distance from the coronary sulcus to the apex. This branch supplies the posterior third of the interventricular septum. From the origin of the posterior descending branch, the right coronary artery crosses the interventricular sulcus to reach the posterior surface of the left ventricle, where it divides into two or three branches which arch sharply and pass downward three-fifths the distance toward the apex. These branches do not extend beyond the left margin of the heart.

Certain variations in the distribution of the right coronary artery occur and these departures should be thoroughly appreciated. At times, the posterior descending branch and the other branches of the right coronary artery extend to the apex, and occasionally slightly beyond; the right coronary artery, in such instances, supplies the whole posterior surface of the left ventricle, part or all of the apex, and the posterior third of the interventricular septum.

In some cases, the right coronary artery does not extend to the posterior interventricular sulcus, and therefore does not supply the posterior surface of the left ventricle, in which event, the whole left ventricle and the entire interventricular septum is nourished by the left coronary artery. The part played by the posterior descending branch of the right coronary artery is then assumed by the circumflex branch of the left coronary artery.

The anatomy relative to the left coronary artery is so well known that further comment here would be irrelevant.

Whitten's specimens also show fundamental differences in the method of muscular penetration of branches of the right and left coronary arteries. The branches of the right coronary artery that supply the right ventricle spread out over that chamber as gradually angulating tributaries. The branches of the left coronary artery, and also those of the right coronary artery that supply the left ventricle are not issued in this gradual manner, but penetrate through the myocardium at right angles. Few secondary branches are given off until the region of the endocardium is reached, where sharp angulation again occurs, and the vessels end in an abundant network of fine arterioles.

It is thus evident that the left coronary artery is firmly fixed, as are also those branches of the right coronary artery which supply the left ventricle. This unquestionably subjects the circulation of the left ventricle to greater stress than that occurring in the more mobile vessels of the right ventricle.

Thus are portrayed the complicated channels of nutrition as they occur in the average normal heart, and as they occur in variations that still include the range of normal. A composite view of the circu-

lation of the heart, as gleaned from these specimens, so clearly depicting the enormous extent and distribution of the vascular channels, furthers our appreciation of the remarkable and intricate structure of the human heart.

The capillary bed of the heart has been studied by Wearn[3], who perfused the beating heart with a suspension of Berlin blue. Sections of muscle were then examined microscopically and the capillaries counted. His study indicated that there was a very extensive capillary bed, an average of one capillary for every muscle fiber being estimated for the ventricular wall and papillary muscles, whereas fewer were demonstrable in the auricular muscle and the specialized conducting system. Wearn estimated that the number of capillaries in the ventricular and papillary muscles was about twice that found by Krogh in skeletal muscle.

The Thebesian vessels, another component of the circulation of the heart, have received considerable renewed interest in the last few years. These connecting channels were first described by Vieussens, in 1706, and again by Thebesius, a few years later. They are small, venous channels connecting the coronary arteries with the chambers of the heart. Wearn[4], in 1928, by perfusion experiments, demonstrated this additional circulation, and showed connections between the larger coronary veins and the Thebesian veins. He stated that under certain circumstances 90 per cent of the arterial flow of blood may escape by way of the Thebesian vessels, and that occasionally this circulatory system may adequately nourish the heart muscle. It is probable that in some cases of coronary occlusion, cardiac nutrition is favored by the augmented function of the Thebesian circulation. Grant and Viko, a year later, minutely described the anatomic variations of the Thebesian vessels.

PHYSIOLOGIC DATA

Newer concepts regarding the physiology of the coronary circulation are found in the experimental studies of Anrep and Segall. They investigated the mechanism of peripheral and nervous regulation in the denervated and the innervated heart-lung preparation. In the denervated preparation, they found the arterial blood pressure to be the only mechanical factor which determined the coronary circulation. Changes in cardiac rate, and in contraction amplitude, had no effect on the flow of blood per minute through the coronary vessels. In the innervated heart-lung preparation, the flow of coronary blood was determined by the minute output of the heart. An increase in cardiac output was accompanied by an increased coronary flow, and was believed to be a reflex mechanism, disappearing after section of both vagus nerves.

CLINICAL DATA

Owing to the actual increase of coronary disease, one is forced to analyze present day conditions in the attempt to find some suitable reason for the increase. The major obstacle in this connection is the fact that knowledge of the causes of arteriosclerosis is still speculative. However, the impression that some effect has followed the obvious changes that have taken place in conditions of living, and in the manner of working and playing, cannot be avoided. This age is fraught with stress, excitement, worries, anxieties, and calamities, and the circulatory system must carry the brunt of these artificially created evils. The part played by heredity cannot be overlooked, although few reliable data pertinent to this factor are available. One cannot but speculate on the effect of poor alcoholic beverages on the arterial system, and in spite of the statistics circulated at this time, attempting to prove that black is white, we, as physicians, know that prohibition has not been prohibitive, and that the consumption of raw and synthetic alcoholic beverages is on the increase, particularly among the younger part of the population. This is a serious medical problem and should solicit the unbiased consideration even of the idealist.

Data on, and influences from, 1,000 cases of coronary disease in which the anginal syndrome occurred. The anginal syndrome occurs more frequently among men than among women; the incidence in a series of 1,000 cases of coronary disease seen at The Mayo Clinic, was 84 per cent males and 16 per cent females. Occupation and its possible effect on the production of the anginal syndrome was investigated, in these cases. The occupations were divided into three groups as follows: laborious, semi-laborious, and sedentary. In only 213 cases (21.3 per cent) could the occupations be listed as laborious (table 3). Farming outranked all other occupations (161 cases) which probably to a considerable degree is influenced by the fact

TABLE 3

OCCUPATIONAL DATA IN 1000 CASES OF ANGINA PECTORIS

	Cases	Per cent
Laborious Occupations	213	21.3
Farmer	161	
Mechanic	15	
Carpenter	9	
Laborer	8	
Brick mason	4	
Plumber	4	
Truckster	2	
Miner	2	
Tinsmith	2	
Blacksmith	2	
Laundress	2	
Janitor	1	
Maid	1	
Semi-laborious Occupations	294	29.4
Housewife	137	
Salesman	42	
Engineer	26	
Contractor	15	
Foreman	11	
Trainman	8	
Police officer	6	
Veterinarian	5	
Nurse	4	
Garage man	4	
Mail carrier	4	
Cook	4	
Painter	3	
Prospector	3	
Stockbuyer	3	
Baker	3	
Forester	2	
Oil station attendant	2	
Trapper	2	
Soldier	1	
Shoemaker	1	
Hostler	1	
Ferryman	1	
Upholsterer	1	
Geologist	1	
Collector	1	
Linotype operator	1	
Boatman	1	
Cateress	1	

	Cases	Per cent
Sedentary Occupations	450	45.0
Merchant	118	
Physician	57	
Executive	42	
Clerk	31	
Clergyman	29	
Financier	21	
Real estate agent	19	
Insurance agent	18	
Attorney	18	
Dentist	12	
Manufacturer	10	
Teacher	9	
Barber	8	
Tailor	6	
Editor	5	
Restauranteur	4	
Hotel keeper	4	
Telegrapher	4	
Commissioner	3	
Actor	3	
Junk dealer	3	
Mortician	3	
Postmaster	3	
Steward	2	
Photographer	2	
Salvation Army worker	2	
Telephone operator	2	
Watchmaker	2	
Auctioneer	1	
Musician	1	
Hostess	1	
Horticulturalist	1	
Optician	1	
Librarian	1	
Author	1	
Bookkeeper	1	
Chemist	1	
Congressman	1	
Occupation not determined	43	4.3

that a large part of the clientele of the clinic is composed of farmers.

Patients who had semi-laborious occupations ranked next, with 294 cases (29.4 per cent); the largest number of patients of any occupation among the 294 was 137 housewives; I have listed these conservatively as having semi-laborious occupations. The largest number of patients followed sedentary occupations, 450 (45 per cent). Merchants were first in order, and then physicians. Coronary disease has frequently been referred to as a disease of physicians and perhaps with some justification.

These statistics seem to indicate that the stresses and strains of business and professional life play a more important part in coronary disease than do the stresses and strain of the farmer or laborer, who perhaps, owing to temperamental and environmental differences, reacts in a manner less detrimental to his arteries.

Arteriosclerosis affecting the coronary arteries, often progressing to the stage of marked calcification, impairs cardiac function according to the extent and degree of involvement, and according to the rate at which the occlusive process develops.

The concept at one time was prevalent that coronary disease, when sufficiently

marked to impair cardiac nutrition, was always evidenced by the syndrome of angina pectoris. Although the anginal syndrome is the outstanding expression of coronary disease, it is by no means the only manifestation. There are numerous instances in which interference with cardiac nutrition is manifested by dyspnea occurring with undue effort, or occurring as a paroxysmal disorder when the patient is at rest. At times, the syndrome of congestive heart failure occurs, especially in those cases complicated by cardiac hypertrophy consequent to hypertension, or to failure following cardiac infarction.

The arterial lesions of coronary disease are almost without exception limited to the larger arteries. Unlike arterial lesions in other parts of the body, the coronary arterioles, with the exception of thrombosis, remain remarkably free of involvement.

The atherosclerotic process may involve both the right and left coronary artery simultaneously, yet frequently only one secondary branch of either artery is involved, the remaining vascular structures being found to be quite normal. The process may result in complete loss of arterial elasticity with, however, little impingement of the lumen of the vessel, resulting in the so-called patent sclerosis. The general tendency, however, is for the production of vascular occlusion, the lesion frequently progressing slowly and often being quite well advanced before the onset of characteristic symptoms. In other cases, localized occluding lesions of the artery are present, at times only 0.5 cm. in extent, occurring singly, with involvement of only one branch and again being present in numbers. These lesions are frequently referred to as the plaque type of sclerosis. I have observed cases in which there was only one plaque, the remaining portions of the coronary tree being quite normal, and death was due to obstruction of only a fraction of an inch of a single coronary branch.

Syphilis of the coronary arteries seldom occurs; in records of necropsy studied at The Mayo Clinic, such a lesion was not mentioned. One or both coronary ostia are frequently markedly occluded by the scarring and deformity consequent to syphilitic aortitis, but in these cases an abrupt line of demarcation exists, the coronary arteries themselves remaining uninvolved.

The characteristic myocardial lesion resulting from gradual narrowing of the coronary circulation is myofibrosis. This may be confined to the region supplied by a certain artery, or it may be extensive. This pathologic change was, until relatively recently, identified as chronic myocarditis, implying an infectious or toxic lesion, and clearly confusing the issue, a fact which unquestionably greatly retarded progress in establishing the relationship of impaired cardiac nutrition and involvement of the myocardium.

The characteristics of the anginal syndrome are so well known that I shall not dwell on them, but I shall attempt to stress the atypical and often subtle manifestations that frequently lead to diagnostic error.

It must always be borne in mind that the site of the origin of pain, and the distribution of pain in angina pectoris may be variable. It is not unusual for the patient to experience pain in the upper part of the abdomen, in the epigastrium, or in either subcostal area, thereby causing attention to be directed to a possible lesion in the upper part of the abdomen. This is particularly true in cases of coronary thrombosis in which the diagnosis of gallstones, ruptured peptic ulcer, or acute pancreatitis, is frequently rendered. Also, acute indigestion and ptomaine poisoning may be considered causes of sudden death.

A fact not to be forgotten is that the ordinary anginal attack is of relatively short duration, rarely lasting fifteen minutes, and invariably related to cardiac overload, such as exertion, emotional display, or overeating. The attack of longer duration, particularly when it lasts an hour or more, is virtually always the result of coronary thrombosis.

The objective examination of the heart, in the presence of the anginal syndrome, often fails to reveal conclusive data, for cardiac enlargement may be absent, rhythm may be normal and murmurs may not be detectable. A careful study of the heart tones, however, frequently offers a clue that the heart is not normal, the tones being somewhat muffled, and lacking the well defined character of those of the normally functioning heart.

Numerous cases, however, are encountered in which the heart is definitely enlarged and objective evidence of disease is obvious. In such cases particularly, associated conditions are found that in themselves are capable of producing hypertrophy and failure. I refer especially to

hypertension, and in this series of 1,000 cases well established hypertension occurred in 332 (33.2 per cent). It is probable that in other cases blood pressure had been elevated previously and then normal or low pressure had been spontaneously restored, leaving a hypertrophied heart as a relic of the former hypertension.

Healed cardiac infarction, especially if multiple infarctions have occurred, is also capable of producing cardiac hypertrophy, as shown by the studies of Smith and Bartels. Healed cardiac infarction occurred in 109 cases (10.9 per cent), in the series of 1,000 cases before mentioned.

The electrocardiogram is an important diagnostic adjunct in the diagnosis of disease of the coronary arteries. It is significant that in only 338 cases (33.8 per cent) in this series of 1,000 cases were electrocardiograms essentially negative, and thus clearly showing the value of this method of examination (table 4).

and III, in twenty-five cases. Diphasic T waves in the leads mentioned occurred in 187 cases, bringing the total of cases in which there were anomalies of the T wave to 525 (52.5 per cent of 1,000). In seventy-four of these 525 cases (14.1 per cent) cardiac infarction had healed.

Disturbances in cardiac conduction occurred in eighty-two cases (8.2 per cent of 1,000). Complete bundle-branch block occurred in seventeen cases, incomplete bundle-branch block in fifty-seven cases, delayed auricular ventricular conduction in seven cases, and complete heart block in only one case. Major disturbances in rhythm, comprising auricular fibrillation and flutter, occurred in only twenty-eight of the 1,000 cases (2.8 per cent). In twenty-five cases there was auricular fibrillation, and in only three was flutter recorded.

Lengthened Q waves in lead III, according to the criteria of Pardee[35], occurred in 135 of the 1,000 cases (13.5 per cent). In

TABLE 4

ELECTROCARDIOGRAPHIC FINDINGS IN 1000 CASES OF ANGINA PECTORIS

	Cases	Per cent*
T wave changes	525	52.5
Negativity in lead I	171	
Negativity in leads I and II	62	
Negativity in leads II and III	80	
Negativity in leads I, II and III	25	
Diphasic T waves in significant leads**	187	
Conduction disturbances	82	8.2
Complete bundle branch block	17	
Incomplete bundle branch block	57	
Delayed A-V conduction***	7	
Complete heart block	1	
Major disturbances of rhythm	28	2.8
Auricular fibrillation	25	
Auricular flutter	3	
Lengthened Q wave lead III	135	13.5
R-T segment changes:		
Depression, elevation or contour changes	266	26.6
Normal electrocardiogram	338	33.8

*The percentages do not total to 100 owing to the fact that the abnormalities frequently occurred in combination in the same case.

**Comprising leads I, I and II, II and III and I, II and III.

***The delayed conduction in these cases was not abolished by the subcutaneous injection of atropin.

T wave negativity occurred with greatest frequency, being present in 338 of the 1,000 cases (33.8 per cent). The occurrence of this abnormality according to leads was as follows: Lead I in 171 cases; leads I and II, in sixty-two cases; leads II and III, in eighty cases, and leads 1, II a previous study of 300 cases, in 28.29 per

cent of which the electrocardiograms revealed large Q waves in lead III, I[m] found the anginal syndrome to occur in 25.3 per cent and in 66 per cent it was the only graphic abnormality present.

Changes in the R-T segment, namely, depression, elevation, and changes in con-

tour occurred in 266 of the 1000 cases (26.6 per cent). Detailed consideration of these alterations, and the means of distinguishing differences in contour will not be undertaken here, but will form the basis of another study.

It is thus evident that electrocardiography occupies a very important place in the diagnosis of coronary disease and its application as a routine in the appraisal of cases of actual or suspected disease of the heart is warranted.

Coronary Thrombosis. The diagnosis of coronary thrombosis, with resulting infarction of the myocardium, has been converted from an elusive problem, rarely solved by the clinician, to a clear-cut diagnosis now made with unerring accuracy by a host of physicians. This metamorphosis has occurred over a relatively short span of years, probably the earliest accurate clinical description of the condition in this country being that of Herrick[5], in 1912. A hitherto uncommon condition has become a common one. It is frequently stated that the increase in coronary thrombosis is only apparent, due to greater diagnostic accuracy, but records of necropsy refute such statements. Little doubt exists that the disease is on the increase. In a recent study of 1,000 consecutive postmortem examinations, of unselected subjects, conducted at The Mayo Clinic, Barnes and Ball found reports of myocardial infarction in forty-nine cases (4.9 per cent),

Although coronary thrombosis stands out as a clinical entity, it is nevertheless a component of coronary disease in general, for it does not occur when the coronary arteries are normal. A small mural thrombus is formed, usually on an area of intimal roughening in one of the larger coronary branches. It gradually increases in size, and is either detached and carried on by the flow of blood completely to occlude a branch, as it becomes incarcerated by the diminishing size of the vessel, or it completely occludes the vessel at its site of origin. This sudden obstruction of circulation results in infarction of the myocardium in a region corresponding to the artery occluded. Barnes and Ball studied the site of infarction, and found that in all of their forty-nine cases the infarcts occurred in the left ventricle. Incidentally, the material obtained at necropsy in The Mayo Clinic, up to the present time, contains no instance of demonstrable infarction of the right ventricle. Barnes and Ball found the anterior portion of the left ventricle, and the apex, to be the seat of infarction in twenty-eight cases (table 5). The median portion of the left ventricle was the site of infaction in eight cases, whereas there was infarction of the posterior basal portion of the left ventricle in twenty-four cases. Diffuse infarction beneath the endocardium occurred in three cases.

It is well to recall, at this point, Whitten's demonstration of the right coronary artery as the vessel supplying the posterior basal portion of the left ventricle in the majority of cases. It thus becomes

TABLE 5

SITE OF INFARCTION AND OCCLUSION IN 49 CASES*

	Cases**
Site of infarction in left ventricle	
Anterior portion and apex	28
Median ventricular portion	8
Posterior basal portion	24
Diffusely beneath endocardium	3
Artery demonstrated to be occluded	
Left coronary	
Anterior descending branch	18
Circumflex branch	7
Right coronary	9
Artery to region of infarction when occlusion not demonstrated	
Left coronary	
Anterior descending branch	10
Circumflex branch	10
Right coronary	11

*Modified table from Barnes and Ball.

**Two infarcts were present in 12 cases and three in 2 cases.

evident that occlusion of the right coronary artery does not result in infarction of the right ventricle, as previously believed, but of the left ventricle in its posterior basal portion. In the customary opening of the heart as practiced by pathologists, this important region may be overlooked, a fact which undoubtedly has been the basis for failure to demonstrate numerous infarcts.

The clincal syndrome of coronary thrombosis is characterized by severe pain, usually beneath the sternum, but at times in the epigastrium with or without radiation into one or both arms. The pain is persistent, lasting from several hours to one or two days, and in several cases of multiple infarction, it has lasted from sixty to ninety hours. The patient frequently appears to be in shock, the body is covered by cold perspiration, there is a rapid fall in blood pressure, and he fears impending dissolution. In a relatively short time following the onset of the attack, the anxious facies of the patient becomes accentuated by ashen pallor. Nausea and at times vomiting complicate the clinical picture. Occasionally cases are observed in which there is no pain, and here dyspnea and the other symptoms of infarction are evident. The heart tones are frequently rapid and lack definition, and at times their regular sequence is interrupted by premature contractions. Within four to twenty-four hours a pericardial friction rub may be audible, the result of the inflammatory reaction surrounding the region of infarction, involving the visceral and subsequently the contiguous parietal pericardium. This is particularly true when the infarct is situated anteriorly.

Fever always occurs, and ranges from 99.6° to 102°F. or higher. It frequently occurs within a few hours after the onset of the attack and usually attains its maximum on the second or the third day. The number of leukocytes ranges from 11,000 to 20,000 in each cubic millimeter of blood, or higher, usually becomes evident within twelve to twenty-four hours, and lasts for a variable period of time, depending on the progress of the case.

Death may occur in the first attack, sometimes immediately, or not for several days to a week or two. There are many cases, however, in which patients make a fairly complete recovery and live for many years. A group of such cases, including some of recurrent infarction, has been reported by Willius and Barnes and by others. The discovery of healed infarcts in the course of postmortem examinations performed as a routine adds further proof to these observations.

The mechanism of death in cardiac infarction is of importance, and warrants brief comment.

In cases of sudden death, which occurs particularly if a large branch is occluded, or if the usual anatomic distribution of the coronary arteries is unusual and a considerable portion of the ventricle is supplied by the artery occluded, it is probable that cardiac asystole occurs abruptly, perhaps preceded by ventricular fibrillation. If death does not occur immediately, it may supervene rather unexpectedly when the patient is believed to be recovering. Under these circumstances, one of two complicating conditions occurs.

Frequently the infarct involves the thickness of the myocardium, and the inflammatory reaction extends to and involves the contiguous endocardium, resulting in formation of a mural thrombus. Subsequently, a portion of this thrombus may become detached, with resulting fatal embolism, the usual destination being a cerebral artery, a mesenteric artery, or an artery of the lower extremity.

When progressive necrosis of the infarct occurs, spontaneous rupture of the heart results, and numerous instances of this catastrophe are now on record. If extensive infarction of the interventricular septum occurs, complete heart block with convulsive snycope may result in death within a few hours after the onset of the attack".

Death may occur several months or years later, from progressive heart failure, and in many of these cases there are areas of marked ventricular thinning and bulging at the site of the old infarct, the so-called ventricular aneurysms.

Much important information is available to the clinician by daily observation of the leukocyte count. As I have mentioned, leukocytes usually number 11,000 or more within the first twelve hours. The proportion of polymorphonuclear leukocytes is 80 to 90 per cent. When the progress of the case is favorable, the leukocyte count becomes restored to normal within five to seven days. However, if the number of leukocytes does not return to normal, or shows a progressive tendency to increase, or if it increases after a pre-

liminary drop, the clinician may be certain that one of two complications is imminent. There is either a sizable mural thrombus that may result in fatal embolism, or progressive myocardial necrosis that may result in cardiac rupture. I believe it is safe to assert that a careful daily record of the leukocyte count in coronary thrombosis is the most reliable prognostic guide.

In a recent investigation at The Mayo Clinic, Patmos studied the healing of myocardial infarcts of patients who had died at varying periods following coronary occlusion. This work is of great practical importance, for it answers the question of how long the patient with coronary thrombosis should be kept at complete rest in bed. His study permitted him to divide the healing of infarcts into four stages:

1. When death occurred within two to four hours after occlusion, focal regions of degeneration were interspersed between muscle of normal appearance. There was slight interstitial edema and congestion of blood vessels. In the muscle bundles regions of early necrosis, cloudiness, pyknosis of nuclei, and diminution of the transverse striations were demonstrable.

2. In the infarcts between four hours and five days old, there was complete necrosis and acute inflammation. The necrotic regions were found to coalesce, and numerous polymorphonuclear leukocytes were discernible around the edges. A few lymphocytes, mononuclear leukocytes, and extravasated erythrocytes were visible. Polymorphonuclear leukocytes first appeared within the adventitia of capillaries at the end of four hours, and gradually increased in number during the succeeding four days. In infarcts which were two days old, phagocytosis was well under way. Increasing amounts of fat were apparent in the necrotic and degenerated muscle cells, and karyorrhexis and karyolysis of nuclei of primary muscle bundles were pronounced. There were cellular changes ranging from hyaline to granular degeneration. Fibroblasts were occasionally seen at the margins of necrotic portions of infarcts thirty-six hours old but were not numerous unless they were five days old.

3. Infarcts from five to twenty-two days old, and even more, gave evidence of rapid disappearance of the inflammatory reaction, and gradual replacement by connective tissue. Fibroblasts were arranged at right angles to the newly formed blood vessels and if nine days had elapsed since the infarction they were prominent and the necrotic portions were greatly diminished. After twenty-two days, regions of diffuse fibrosis were present.

4. In infarcts that were four to six months' old, condensation and contraction were present, and represented complete healing.

My observations lead me to conclude that at least five to six weeks of complete rest is advisable for patients convalescing from coronary thrombosis, and that guarded activity is indicated for at least six months or longer, according to the individual case.

Electrocardiography is of untold value in coronary thrombosis, not only as supplementary evidence of its existence, but in localizing the infarct; frequently it is the only means of identifying multiple infarctions. If death occurs within a few hours following onset of the attack, the electrocardiogram may fail to reveal characteristic alterations, although in one case changes were observed within half an hour.

The first combined clinical and electrocardiographic report of coronary thrombosis in this country is credited to Herrick[10]. Pardee[11] in 1925, described changes in the T wave, which he associated with sudden coronary occlusion. The same year, I reported two cases[12, 13] of coronary thrombosis, with detailed electrocardiographic observation, and commented on the importance of this method of examination in diagnosis of the condition. Parkinson and Bedford in 1928, called attention to alterations in the level of the R-T segment of the electrocardiogram and changes in its contour occurring constantly in cases of myocardial infarction. Barnes and Whitten and later Barnes pointed out the value of the electrocardiogram in permitting accurate localization of the region of infarction. This work fundamentally hinges on the anatomic studies of Whitten which have been mentioned.

The left coronary artery supplies the anterior portion and apex of the heart, and the median portion of the left ventricle, and infarcts in these regions can be, by graphic methods distinguished from those occurring in the posterior basal portion of the left ventricle, the region supplied by the right coronary artery.

When the left coronary artery is obstructed and the corresponding portions of the myocardium become the site of infarc-

tion, the earliest electrocardiographic changes consist of elevation of the R-T segment in lead I and also usually in lead II, and corresponding depression of the R-T segment in lead III.

The first and third leads are essentially mirror images of each other. These changes are apparent within twelve to twenty-four hours (table 6). The changes in the segments then become more pronounced, and the T waves in lead I, and frequently also in lead II, become negative. A stage is usually observed when they are diphasic.

From the fifth to the tenth day the changes in segments become more marked, the negative T waves become very deep, and the positive T wave in lead III, becomes high and very abrupt, and the characteristic T waves described by Pardee" are evident.

When the right coronary artery becomes occluded and the posterior basal portion of the left ventricle becomes the site of infarction, essentially opposite electrocardiographic changes ensue, leads II and III becoming the seat of T wave negativity.

In event of infarction of both the anterior and the posterior surfaces of the left ventricle, the electrocardiogram assumes the characteristics of the first part to be the site of infarction, and then tends to change, reflecting the subsequent region of destruction.

Prognosis in coronary disease. The anginal syndrome and coronary thrombosis represent the most serious forms of coronary disease. The early manifestations of the anginal syndrome are too often considered insignificant by the physician, because the objective examination of the heart often reveals little, if any, evidence of disease, and therefore the patient is permitted to carry on his usual work. The onset of retrosternal pain or discomfort, and the occurrence of nocturnal dyspnea, particularly in middle life or later, should always be considered an ominous sign until positively proved otherwise. The fact that the origin and distribution of pain are often atypical requires knowledge of these possibilities in evaluating the condition of a patient whose complaints are not typical. Hay commented as follows:

"Prognosis is often at fault because the significance of the slight and early manifestations is misinterpreted. These minor anginas have certain characteristics which should enable them to be recognized for what they are, symptoms often unobtrusive, yet significant, and only yielding up their secret to careful cross-examination. They may be compared to a gesture, slight but ominous, and full of menace."

Coronary thrombosis is one of the most serious catastrophies in cardiology, and

TABLE 6

SITE OF INFARCTION AS RELATED TO THE ARTERY OCCLUDED: ELECTROCARDIOGRAPHIC CHANGES

Left coronary artery	Right coronary artery
Anterior portion and apex	Posterior basal portion of the left ventricle and the posterior third of the interventricular septum.
1. Elevated R-T segment in lead I and usually in lead II; depressed R-T segment in lead III.	1. Depressed R-T segment in lead I; elevated R-T segment in leads II and III.
2. These changes become more apparent and the T waves in lead I and usually in lead II become negative.	2. The above changes become more marked and the T waves in leads II and III become negative.
3. Further exaggeration of the R-T segment changes with deep negativity of the T waves in lead I and usually in lead II; the positive T wave in lead III tends to become high and abrupt; changes in contour of the T waves occur.	3. Further exaggeration of the R-T segment changes with deep negativity of the T waves in leads II and III and abrupt high positive T waves in lead I; marked alteration in T wave contour.

it may occur in any case of coronary disease, even though the vascular changes are minimal. The immediate mortality is exceedingly high; probably half of the patients die at once, or within a relatively short time. Those who survive the immediate attack may live for several months to several years, death frequently resulting from progressive myocardial failure or recurrent cardiac infarction.

Treatment. Treatment of coronary disease consists to a large extent, of establishment of an individualized program of life. Every effort should be made to reduce the patient's plane of activities to a level at which seizures are avoided. This, of course is not always possible, and supplementary measures are necessary. The patient must be instructed in detail regarding his self-discipline, for in order completely to alter living and working methods, a complete change in his philosophy of life must be accomplished. We cannot expect the patient to accomplish this himself, and it is here that the interested and humane effort, and patience of the physician is demanded. The details of this relationship between the physician and the patient cannot be elaborated at this time but it is a subject of extreme importance.

It is frequently advisable to equip the patient with nitrites in order to enable prompt relief from pain, but it is always necessary to inform him definitely that the drug is not one to be used in a manner that will permit him temporarily to overstep his limited threshold. Employment of nitrites in such a manner is extremely hazardous and is to be condemned.

In recent years, the use of the xanthine derivatives has given beneficial results in many cases, modifying the frequency and severity of the seizures, and in some cases causing their complete cessation. The preparations of this sort that most commonly are used are theobromine, theobromine sodiosalicylate and ethylenediammetheophyllin (metaphyllin). They may be administered for long periods of time, and it is rare that symptoms of intolerance supervene. The use of digitalis is indicated only in the presence of congestive heart failure.

The patient's diet should be modified to meet the requirements of the individual case, and above all, overeating and rapid eating should be prohibited. It is advisable for the patient to rest after a meal. Reduction of protein in the diet seems advisable, and the degree of reduction again, must be individualized. The avoidance of foods from which gas is generated, likewise should be reduced or prohibited, as the case may be.

Not infrequently, patients have severe anginal attacks during meals or soon thereafter, and under such circumstances, the rather frequent ingestion of small meals is helpful.

The ardor that prevailed a few years ago regarding sympathectomy in cases of anginal syndrome has gradually waned, and today relatively few procedures of this nature are carried out. The relatively high mortality attending the operation, and the uncertainty regarding relief of pain probably have done more than anything else to discourage the procedure. A fundamental objection to the method was its purely palliative nature; it in no way altered the pathologic processes of the disease, and the fact that when successful, it eliminated pain, removed the patient's only warning sign. I will not dispute the fact that under certain circumstances, sympathectomy may have a definite indication. I can visualize the patient, receiving no benefit from a thoroughly tried and ideally instituted medical regimen who continues to have severe attacks with great frequency, and who accepts sympathectomy as a final effort for relief. However, to revert back to the optimism concerning the method, that prevailed in 1926, would be a misfortune,

Paravertebral injection of nerves is a method of considerable value in a group of carefully selected cases. Its chief indications lie in cases in which medical treatment has failed to give relief, and in which risk of any procedure is not prohibitive.

The first five thoracic nerve roots on the left side, and at times on the right, are subjected to injections of procaine, followed by absolute alcohol. Complete relief may not be permanent, but the procedure can be repeated if necessary. Cases have been noted in which relief of pain has been almost immediately supplanted by paroxysmal dyspnea.

In this consideration of coronary disease I have attempted to bring out the newer concepts regarding it, and have at-

tempted to correlate the clinical features with the pathologic changes underlying the disease as they are at this time.

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REACTION TIME OF NORMAL PUPIL

H. S. Gradle and Walter Ackerman, Chicago (Journal A. M. A., Oct. 15, 1932), report that in normal young blue-eyed persons, the pupil reacts in accordance with the following terms: (a) On illuminating the eye, there is a latent period of 0.1875 second. (b) This is followed by a primary contraction of the pupil lasting 0.4365 second at the rate of 5.48 mm. per second. (c) Then there comes a secondary contraction of the pupil lasting 0.3125 second at the rate of 1.34 mm. per second. (d) When the illumination is removed, the pupil starts to dilate at the rate of 0.95 mm. per second.

CHRONIC GASTRIC ULCER IN CHILDREN

J. C. Foshee, Grand Rapids, Mich. (Journal A. M. A., Oct. 15, 1932), points out that chronic gastric ulcer in children is more common than has been supposed, although it still remains noteworthy for its rarity of recognition. Undoubtedly, in the future, more cases will be recognized and reported if these children are given the same careful examination and investigation that is given to adults. The cause is as indefinite as it is in adults. Infection in children plays the most important role. The ulcer constitution in some cases stands out paramount, for in them it begins with their early infancy, before infection has become a factor. Influencing factors, such as alcohol, tobacco, overwork and nervous tension, play no part in the cause of ulcers in children as they may in adults. The pathologic changes are quite extensive and as massive as those found in adults. Penetration and perforation are almost the rule, with the invasion of the adjacent organs. Symptoms that are quite pronounced and typical of ulcer may go a considerable time unrecognized until the patient suffers hemorrhage or perforation. Fourteen of nineteen patients with this condition recovered, thirteen of whom were operated on. One patient recovered under medical management. One of the five patients who died was operated on, but the case was not recognized, since it was mistaken for a peritonitis from acute appendicitis, but autopsy revealed a perforative ulcer on the lesser curvature and a normal appendix. The four remaining cases were discovered at autopsy. Posterior gastro-enterostomy was performed in twelve cases and a partial gastric resection with anterior anastomosis in one; all were successsful, and those patients have not shown recurrences of either gastric or marginal ulcers.

TUMORS THAT ORIGINATE FROM ENDOCRINE DYSFUNCTION*

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Abstract. Each part of the body is transmitted from parent to off-spring by genes. The growth and size of each part is dependent upon stimulation by hormones derived from ductless glands. If the endocrine influence is absent or withdrawn, dwarfing or hypoplasia results; if the stimulating hormone is in excess, giantism or overgrowth may follow.

Examples of deficient growth are seen in infantilism, type Lorain, from pituitary dysfunction, and in cretins from the absence of thyroxin. Ablation of the anterior pituitary arrests the growth of the uterus and ovaries in the immature and causes atrophy of these organs in the mature animal. Growth is therefore a response to specific hormones. If there is no hormone there is no growth. From the pregnancy hormone the breasts of boy babies may lactate, their external genitals swell. Even descent of the testes may be precipitated, as recently shown by Engle, by the injection of the pregnancy hormone.

Normally the body is cast in a chemical mold, each cell and part being held to rigid limits as to size and shape by specific chemical compounds circulating in the blood. Thus an epithelial cell, the nose, an arm, the liver, maintain a definite individual size from birth to death.

Physiologic new growths of limited duration depend upon new or modified ductless glands of transient existence. That pregnancy may progress, for example, there is a special gland, the corpus luteum. Remove the corpus luteum and the hyperplasia of pregnancy ceases.

If one attempts to add to the size of the body or of its individual parts by transplanting a mass of epithelial cells, a bone, a finger, a gland from another person, cytolysins remove the alien elements. Even a skin graft from parent to child is not tolerated. For successful grafting the tissue must come from the individuals own body—an iso-graft.

Abnormal new growths may be called into being by the dysfunction of ductless glands. These pathological overgrowths may involve the entire body, a system, a member, an organ, a tissue, a cell or group of cells. An example of overgrowth of the entire body is seen in the giantism resulting from the over-activity of the eosinophilic cells of the anterior pituitary (eosinophilic adenoma). Overgrowth of a system from glandular dysfunction is illustrated by the virilism due to tumors of the suprarenal cortex. Overgrowth of a member is seen in certain forms of pituitary disease. Overgrowth of an organ is illustrated by gynecomastia apparently from the persistance of female sex hormones in the male. Overgrowth of a tissue is illustrated by the overgrowth of bone, the bony exostoses, and the Froelich type fatty deposit seen in various forms of pituitary dysfunction. The trochanteric type of adiposity from the menopause of castration and the overgrowth of ocular muscles in exophthalmic goitre are not as clear additional examples.

New growths which have long been considered as benign or malignant tumors result from endocrine dysfunction. Fibromyomata affect parts of the uterus that become hyperplastic during pregnancy and depend for their growth upon an ovarian hormone. Endometrial tumors (endometromas) grow in the uterus, pelvis, appendix, intestine, bleed with menstruation and show invasive or malignant tendencies but disappear when the ovarian function is abolished. According to Aschheim the hydatidiform mole occurs in association with multiple corpus luteum cysts which in turn probably depend upon a hormone from the anterior pituitary.

Tumor-like overgrowths develop from faulty lipoid metabolism the underlying endocrine dysfunction not having been determined. Thus, hyperplasia of cells distended by lipoids occurs in Gaucher's disease, Neimann-Pick disease, Schuller-Christian disease, in xanthomata and in the foam cell tumors of the jaws and tongue. With the Krukenberg tumor the peculiar malignant growth of signet-ring cells limited to the gastro-intestinal tract, both ovaries, and occasionally the mammary glands, is contrary to our concepts of metastasis and suggests an underlying endocrine dysfunction. There is clearer evidence, however, that certain giant-cell tumors and cysts of bone are due to hyperparathyroidism. These tumors include growths that formerly were termed mye-

*Read at the Third Annual Fall Clinical Conference, Oklahoma City Clinical Society, November 3, 1932.

lomas or giant-celled sarcomas. After removal of the parthyroid tumor or one or more of the parathyroids, the tumors may disappear.

There are features about the carcinoids (argentaffine tumors), about multiple enchondromas, multiple exostoses, multiple fibroneuromas and other tumors that suggest a possible endocrine basis.

We can no longer believe that tumors are always autogenous new growths and it is logical to consider that pathological new growths may develop and progress as a result of endocrine dysfunction.

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ANATOMIC BASIS OF CLINICAL MANIFESTATIONS OF CEREBRAL VASCULAR DISORDERS

Irving J. Sands, Brooklyn (Journal A. M. A., November 5, 1932), calls attention to the fact that recent investigations of the cerebral circulation and the discovery of the nerve control of the pial and the cerebral vessels have aroused new interest in the manifestations of cerebral vascular disorders. Pfeifer and Cobb have disproved the old theory of end-arteries in the brain; in fact, they have demonstrated conclusively that the capillary bed of the whole cerebral cortex is an endless network, and that there is a free anastomosis between the capillaries of both the surface and the depth of the brain. Hassin has again called attention to the presence of nerve endings in the pial vessels, and Penfield has shown that the intracerebral arteries are innervated in a manner similar to that of the blood vessels of the pia, and, moreover, that the two nerve plexuses are continuous. Forbes and Wolff have demonstrated that the nerve supply of the vessels of the brain is derived from the sympathetic system, and that stimulation of the vagus causes dilatation of the vessels and stimulation of the sympathetic causes their constriction. These facts are of prime importance in the evaluation of the signs and symptoms of the various cerebral vascular disorders. Cerebral arteriosclerosis is the most common of the cerebral vascular disorders. It has been commonly accepted that this condition occurs most frequently in persons of superior intelligence. If one is to assume that there is a close relationship between excessive function and wear and tear of an organ, it is logical to infer that those who are particularly engaged in continuous cerebration must necessarily draw a large amount of blood to the brain, causing the cerebral vessels to function excessively. Emphasis has been placed on the strain of modern civilization as a factor in producing cerebral arteriosclerosis. The stress and strain of modern life, as reflected in anxiety, worry and emotional tension, must be expressed through the vegetative nervous system, and, consequently, on the cerebral vascular system through the action by the vagus and sympathetic systems. Heredity is regarded as playing an etiologic role. Another consideration in cerebral arteriosclerosis is the Virchow-Robin system of the brain. While there is still considerable dispute as to the presence of the Virchow-Robin lymph spaces in the adventitial sheaths of the cerebral arteries, many who have worked with neuropathologic material are convinced that such a system exists. If, therefore, cerebral arteriosclerosis is found more frequently in those who pursue intellectual work and especially if it is apt to accompany the stress and strain of modern life, it is reasonable to assume that the lymphatic system of the brain must carry away excessive amounts of catabolic substances that may prove a source of irritation to the vessel wall and may start a train of physical and chemical changes that may lead to anatomically proved arteriosclerosis. People with cerebral arteriosclerosis generally complain of headache, dizziness, ringing in the ears, a knocking sensation in the head, a fulness in the head and an inability to concentrate. They are usually irritable persons. The sclerotic rtery is unable to relax adequately before the oncoming blood stream and transmits the impact of the blood column directly to the adjacent brain tissue. The continuous pounding of the blood stream on the brain tissue through the sclerosed artery causes irritation of the nerve tissue. Moreover, the Virchow-Robin lymph channel, being handicapped by the arteriosclerotic changes in the vessel walls, is no longer as efficient a drainage system as in normal persons, and this may result in retaining toxic and irritating catabolic substances in the brain. The sclerosed internal carotid artery, passing through the petrous portion of the temporal bone, may prove a source of irritation to the cochlear and vestibular nerves, and may be in part responsible for the dizziness, the knocking sensation and the ringing in the ears of which these persons complain.

SUSTAINED ARTIFICIAL FEVER IN THE TREATMENT OF INTRACTABLE ASTHMA: PHYSIOLOGIC AND THERAPEUTIC CONSIDERATIONS

Samuel M. Feinberg, Strafford L. Osborne and Meyer J. Steinberg, Chicago (Journal A. M. A., Sept. 3, 1932), present a report concerning a group of forty-two patients with intractable asthma, 70 per cent of whom had complications such as emphysema, chronic bronchitis or bronchiectasis, and all of whom had been unrelieved by the usual methods of treatment. Fever, produced by high frequency currents according to a described improved technic, was tried in all these patients and was found to be a safe procedure. Of thirty-five of those in whom the results have been ascertained, 51 per cent had a complete remission varying from several days to nine and one-half months, and 29 per cent had improvement without remissions. It is possible that with cases of milder degree and with more persistent treatment even better results may be obtained. The laboratory determinations and other observations do not as yet allow any conclusion as to the mechanism of this relief. It is suggested that fever therapy may possibly be found useful in other allergic conditions such as urticaria, angioneurotic edema, eczema, hay fever and migraine. In conclusion, the authors state definitely that in fever therapy they have found a method of obtaining relief in some cases of intractable asthma in which all other methods had heretofore failed.

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EDITORIAL

SCIENTIFIC EXHIBITS

Those interested in Scientific Exhibits are reminded that the House of Delegates, meeting at Oklahoma City, May, 1930, directed that, "All exhibits offered to this Society as Scientific be passed upon by the Scientific Committee of this organization." This was amended that offerings were to be made at least sixty days prior to the meeting. This should be distinctly remembered and those who wish to have scientific exhibits should take the matter up with Doctors R. M. Howard, Chairman, Oklahoma City; P. P. Nesbitt, Tulsa; A. B. Chase, Oklahoma City; C. A. Thompson, Secretary, Muskogee. As a matter of convenience the Chairman, Dr. Howard, will be in better position to handle the matter than others, as he resides in Oklahoma City. It is suggested that the wall space and floor space for these exhibits be limited to every reasonable degree.

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THE STATE BOARD OF MEDICAL EXAMINERS, DR. J. M. BYRUM, SECRETARY

In making his biennial report for 1930-31, 1931-32, he states that during the two years, 157 physicians were licensed to practice in the following manner:

Recognized graduates, 105; reciprocity, 47; re-registration of territorial licenses, 3; duplicate, lost or destroyed licenses, 2. During the same period 58 physicians have been endorsed by reciprocity to other states. Actually, however, there has been no gain in the number of physicians actively engaged in the practice of medicine within the state. It is noted that from the most available statistics, the directory of the American Medical Association, 2484 names are licensed as practicing within the state; that is, one physician for every 964 population. It was noted that the average in Missouri is one for every 661; Kansas, 867; Arkansas, 939; Texas 899; while the general average over the entire United States is one for 837 people.

The report notes that while there is no general shortage, it is admitted that many small towns and rural communities have no resident physician, whereas originally they had one or more. This is explained by good roads, automobiles, and the tendency of people to crowd into definite and more cultural centers. The report is uncertain as to what is to be done with these remote communities except to say that it is a community proposition largely, and that the people must get together and offer inducements to physicians to locate among them if they expect medical service in their communities.

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OUR USUAL BIENNIAL LEGISLATIVE ASSOCIATION

Every so often there pops into the legislature some ignoramus, usually with a personal grievance or prompted by some of the cults, with a proposition to limit mileage fees of the doctor. The latest inspiration may be found in House Bill 199,

which limits doctors to twenty-five cents per mile on calls. This proposition, young as is the State of Oklahoma, is nothing new. We have had it before the legislature prior to this and, very sensibly, no one has ever paid any attention to it. Of course the sponsor of this act does not know that doctors are making calls all over Oklahoma for nothing, and have been for two years; that probably as high as 80% of many physicians' office work is not worth putting on the books; in other words, the medical man, as a rule, will be found looking after his own and rendering service to the needy regardless of money.

There is only one suggestion to this legislator, whoever he is, and that is, that the doctors are not going to the country at all; there will be no mileage if it is felt that anyone is undertaking to take advantage of them. To be consistent, this legislator should refuse his $6.00 per day and cut his mileage to bus fare and per diem to $1.00 daily, sure he can live in Oklahoma City on $1.00 a day. He should undertake to limit the salaries paid ministers, fees of attorneys; socialistically he might go a step further and fix prices on boots, shoes, caps and clothing.

"A CLASS" MEDICAL SCHOOLS, HOMEOPATHY AND ELECTICISM

On January 5, there met in Oklahoma City a hybrid organization which constituted themselves as the Legislative Committee of the Oklahoma Electic and Homeopathic Medical Associations. It should be remembered that these schools are part of the present composite board of Medical Examiners, and, so far as it is known, its graduates and mactriculants are slowly disappearing from the medical field in the United States. This organization approved much or most of the legislative propostions advanced by the State Medical Association, but in substance immediately proposed to emasculate and devitalize by senseless amendments or opposition some of the important ones. For instance the right giving clinics and laboratories that legal right to obtain pure grain alcohol is smothered with the proposition that the same right be granted *all practitioners of medicine.* It is obvious that this would be one of the most extreme nuisances the doctor of Oklahoma would have to contend with, even if it were passed. In the first place the general practitioner has rarely if any use for pure grain alcohol, the denatured product serving his purpose just as well. Many doctors would never take out a license giving them permission to prescribe alcohol and those who would, would promptly discontinue their application if they realized what a nuisance the right would be, for every fool friend would immediately want a prescription from "Doc" for alcohol; then, on the other hand, the right would unquestionably be abused in some instances, just as the right to prescribe whiskey is now abused by practitioners of medicine in other states. We think we speak for the medical profession when we say we want no such right. Good whiskey is certainly occasionally needed but we rarely, if ever, have an occasion to use it.

Another proposition, vigorously opposed, was that limiting applicants for medical licensure to class A medical schools. Evidently these gentlemen did not know or did not realize that that is now and has been the rule enforced practically all over the United States, and that until it is generally maintained here we will have a certain low grade type of practitioner creeping in. We regret to see this schism of medicine throwing a monkey wrench into constructive medical legislation.

WASTEFUL PRESCRIBING

We occasionally get something good from our "composite" friends. From the Hahnemannian Monthly we get an editorial on "Waste in Dispensing." We have often wondered and occasionally spoken of that, and we must admit that we still have physicians who write prescriptions from eight to sixteen ounces when often two to a half dozen doses of the medicine would suffice. Sometimes none of it is necessary; however, that is another story. Most acute illnesses require very little medication—something merely to relieve the present aggravating symptoms, sometimes a small amount of symptomatic medication until the doctor is more positive as to what he is dealing with. Our contemporary cites a case of 120 tablets being prescribed, the consumption of which would have required 240 hours or 10 days, that is, if the patient remained awake night and day. The practical point being that only 8 tablets being needed, the patient being well in three days. He cites the prescribing of an ounce of Fowl-

er's solution of arsenic, the dosage, 3 drops 3 times daily, in other words enough to last 160 days. The writer recalls seeing a prescription of 8 ounces of fluid extract of ergot, then a costly drug for a post-partum case, that happening to be a vicious waste of the patient's money and incidentally the patient "tumbled" to the situation and never forgave the doctor. Probably three doses were all that were ever used, the rest of the medicine still remains in the archives of the medicine chest, unhonored and unsung.

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Editorial Notes—Personal and General

DR. D. M. GORDON, Ponca City, who has been ill at his home, is reported improving.

DR. WALTER M. JOHNSON, Ardmore, who has been ill with pneumonia is reported improved.

DR. C. J. ALEXANDER, Clinton, is suffering from injuries received in a fall from the porch of his home.

DR. T. D. ROWLAND, Shawnee, received notice of his appointment as local surgeon for the Santa Fe Railroad.

GREER COUNTY MEDICAL SOCIETY elected the following officers to serve for 1933: Dr. W. O. Dodson, Willow, president, and Dr. J. B. Hollis, Mangum, secretary.

DR. CURT von WEDEL, Oklahoma City, announces the establishment of a department of Internal Medicine and Diagnosis, under the supervision of Dr. Harry A. Daniels, formerly of Rochester, Minnesota.

GARFIELD COUNTY MEDICAL SOCIETY elected the following officers at their meeting in December, 1932; President, Dr. J. R. Swank, Enid; Dr. R. C. Baker, vice president, Enid; Dr. J. R. Walker, secretary-treasurer, Enid.

DR. L. J. MOORMAN, Oklahoma City, who has headed the Tuberculosis Society for the last fifteen years, again has been elected President. In addition to this Dr. Moorman is Vice-President of the National Tuberculosis Society.

PAYNE COUNTY MERICAL SOCIETY elected the following officers to serve for 1933: President, Dr. D. J. Herrington, Cushing; Vice President, Dr. D. A. Mitchell, Stillwater; Secretary-Treasurer, Dr. Katherine Bergegrun, Stillwater.

ROGERS COUNTY MEDICAL SOCIETY elected the following officers at their meeting January 16th: President, Dr. J. C. Bushyhead, Claremore; Vice President, Dr. W. S. Mason, Claremore; Secretary-Treasurer, Dr. W. A. Howard, Chelsea.

PUSHMATAHA COUNTY MEDICAL SOCIETY elected the following officers to serve for 1933, at their meeting in December: President, Dr. D. W. Connally, Nashoba; Vice President, Dr. H. C. Johnson, Antlers; Secretary, Dr. E. S. Patterson, Antlers.

McCLAIN COUNTY MEDICAL SOCIETY elected the following officers for 1933: President, Dr. I. N. Kolb, Blanchard; Vice President, Dr. W. C. McCurdy, Purcell; Secretary, Dr. O. O. Dawson, Wayne; Delegate to state meeting, Dr. B. W. Slover, Blanchard.

THE AMERICAN BOARD OF OBSTETRICS AND GYNECOLOGY will hold a clinical examination in Milwaukee on Tuesday, June 13, 1933. For further information and application blanks address the Secretary, Dr. Paul Titus, 1015 Highland Building, Pittsburg, Pa.

JACKSON COUNTY MEDICAL SOCIETY elected the following officers to serve for 1933: Doctors, J. S. Stultz, Altus, president; C. G. Spears, Altus, vice president; E. W. Mabry, Altus, re-elected secretary; E. S. Crowe, Olustee, delegate; R. F. Brown, Altus, alternate.

CRAIG COUNTY MEDICAL SOCIETY met January 17th and elected the following officers for 1933: President, Dr. Louis Bagby; Vice President, Dr. D. B. Stough; Secretary-Treasurer, Dr. W. R. Marks; Delegate, Dr. F. M. Adams; Alternate, Dr. C. S. Neer, all of Vinita. Censor, Dr. J. F. Walker, Grove.

COMANCHE COUNTY MEDICAL SOCIETY elected the following officers to serve for 1933: President, Dr. Thomas R. Lutner, Lawton; Vice President, Dr. L. W. Ferguson, Lawton; Secretary-Treasurer, Dr. E. Brent Mitchell, Lawton; Censors. Doctors J. W. Malcolm, H. A. Angus, and P. G. Dunlap, all of Lawton.

KIOWA COUNTY MEDICAL SOCIETY held their regular meeting January 16th, and the following officers were elected for 1933: President, Dr. C. R. Preston, Mountain Park; Vice President, Dr. J. M. Bonham, Hobart; Secretary-Treasurer, Dr. B. H. Watkins, Hobart; Censors, Drs. H. C. Lloyd, J. A. Sand, and J. D. Winter, all of Hobart.

MARSHALL COUNTY MEDICAL SOCIETY elected the following officers for 1933, at their regular meeting in January: President, Dr. P. F. Robinson, Madill; Vice President, Dr. J. H. Logan, Lebanan; Secretary-Treasurer, Dr. J. H. Veazey, Madill; Delegate to state convention, Dr. W. D. Haynie, Kingston; Alternate, Dr. J. L. Holland, Madill.

CUSTER COUNTY MEDICAL SOCIETY met at Clinton, December 20, 1932, and elected the following officers for 1933: Doctors, K. D. Gossom, Custer, president; W. E. Seba, Leedy, vice president; E. E. Darnell, Ponca City, secretary-treasurer; McLain Rogers, Clinton, delegate; J. T. Frizzell, Clinton, alternate; N. E. Ruhl, Weatherford, censor.

THE EXTENSION DIVISION, Oklahoma University, will show medical and surgical motion picture films at Guymon, March 13, and at Woodward, March 14, the program as follows:

1. Diagnosis and Treatment of Infections of the Hand.
2. Acute Appendicitis, Professional.
3. Forceps Delivery.

THE IMPERIAL LIFE INSURANCE COMPANY, Tulsa, has been organized with Dr. Fred S. Clinton as vice president and medical director. Dr. Clinton advises that wherever possible none but members in good standing of the Oklahoma State Medical Association will be appointed or retained as examiners. He estimates that from 250 to 300 examiners will be required.

BECKHAM COUNTY MEDICAL SOCIETY held a meeting at the Tisdal Hospital, Elk City, and reorganized their County Medical Society, in December. The following officers were elected for 1933: President, Dr. V. C. Tisdal, Elk City; Vice President, Dr. Phil DeVanney, Sayre; Secretary-Treasurer, Dr. C. F. Jones, Erick; Censors, Drs. H. K. Speed, Sayre; O. C. Standifer, Elk City, and R. C. McGregory, Erick.

STEPHENS COUNTY MEDICAL SOCIETY met in Marlow, December 27, 1932, with Dr. C. N. Talley as host, and elected the following officers for 1933: Doctors, C. N. Talley, Marlow, president; C. P. Chumley, Duncan, vice president; D. Long, Duncan, re-elected secretary-treasurer; J. L. Patterson, Duncan, delegate; J. B. Carmichael, Duncan, alternate; B. H. Burnett, Duncan, public policy; C. C. Richards, Marlow, censor.

WOODS-ALFALFA COUNTY MEDICAL SOCIETY'S meeting, as reported in the January issue of the Journal, reported officers but failed to state for which Society; they were for Woods County, however. These two counties hold joint meetings, but have separate officers. Officers for Alfalfa County Medical Society are as follows: President, Dr. H. E. Huston, Cherokee; Vice President, Dr. J. Wendall Mercer, Cherokee; Secretary-Treasurer, Dr. L. T. Lancaster, Cherokee.

CANADIAN COUNTY MEDICAL SOCIETY elected officers for 1933, at a turkey dinner held in December at El Reno: Dr. D. F. Stough, Sr., Geary, was re-elected president; Dr. P. F. Herod, El Reno, vice president; Dr. D. F. Stough, Jr., Geary, re-elected secretary-treasurer; Dr. Thomas M. Aderhold, El Reno, delegate; Dr. D. P. Richardson, Union City, censor. Drs. J. R. Heatley and S. R. Cunningham, Oklahoma City, gave a joint lecture on the taking of X-rays for the treatment of fractures of the forearm and elbow. Mr. L. W. Kibler, director of the post graduate medical study at the University of Oklahoma, presented a film showing infections of the hand.

POTTAWATOMIE COUNTY MEDICAL SOCIETY held its annual meeting, January 11th, at the Masonic Temple Banquet room, Shawnee. The following program was given after a dinner was served:

Inroduction of Guests:

Violin and Vocal Numbers—Mrs. Horton Hughes, Mrs. Knox Byrum.

A Toast: "To Our Wives,"—Dr. R. M. Anderson, President, Oklahoma State Medical Association.

President's Annual Address—Dr. A. C. McFarling.

Annual Address: "Diagnosis and Surgery in Gall Bladder Disease,"—Dr. Frank H. McGregor, Mangum.

Address: "State Medical Association,"—Dr. T. H. McCarley, McAlester, President-elect, Oklahoma State Medical Association.

Installation of Officers—Dr. L. S. Willour, McAlester.

Motion Picture: "An Alaskan Hunting Trip,"—Dr. J. E. Hughes.

The following officers will serve for 1933: President, Dr. Clinton Gallaher; First Vice President, Dr. Horton Hughes; Second Vice President, Dr. R. C. Kayler; Secretary-Treasurer, Dr. H. G. Campbell, all of Shawnee.

DOCTOR FENWICK RIEFF DEANS

Dr. F. R. Deans, pioneer physician of Fairland and Miami, Oklahoma, died at his home in Miami, December 31, 1932, at the age of 67 years, following an illness of two years.

Dr. Deans was born at Garfield, Arkansas, on January 17, 1865. He was graduated from the Barnes Medical College at St. Louis in 1897, and moved to Fairland, where he practiced until the World war, when he enlisted as a lieutenant and served at Camp Greenleaf at Chattanooga, Tennessee. Following the war he was appointed statistician and physician of the Seneca Indian School at Wyandotte, where he remained until 1923, when he moved to Miami.

Dr. Deans is survived by his wife, seven sisters and two brothers.

Interment was in the Fairland cemetery. The Masonic burial service was conducted at the grave by the Fairland lodge.

DOCTOR WILLIAM H. SMEDLEY

Dr. W. H. Smedley, pioneer physician of Capron, died December 16th, at his home, of coronary occlusion.

Dr. Smedley was born at St. Joseph, Mo., in 1863. He came to Woods County in 1917, graduating from medical college in 1888. Dr. Smedley was 69 years of age at the time of his death.

He was a member of the Oklahoma State Medical Association and Woods County Medical Society.

He is survived by his wife and one daughter.

Burial was in A. O. U. W. cemetery in Alva.

DOCTOR R. L. RUSSELL

Dr. R. L. Russell, Marlow, Oklahoma, died at Chickasha, in October, 1932.

Dr. Russell was born at Washington, D. C., in September, 1870. He graduated from the medical department of Columbia University, Washington, D. C., in May, 1901.

DOCTOR JOSEPH BRYAN ROLATER

In the recent death of Dr. J. B. Rolater at Cave Springs, Ga., Oklahoma City and State have lost one of their most widely known pioneer surgeons. Born in 1861 on a farm in Alabama, just across the Georgia line, he received his academic education at Cave Springs, Ga., the nearest border town.

In 1884 Dr. Rolater received his M.D. degree from Vanderbilt University, Tenn., after which he practiced his profession for two years at Cave Springs. In 1886 he came to Texas and from Texas to Oklahoma City, in 1889, two months after the opening, where he continued in the active practice of his profession until his retirement four years ago.

Dr. Rolater was a man of more than ordinary ability as a surgeon and his medical training was far above the average for that time. Graduating in medicine from one of the best Southern Schools he later did work under the most eminent men of the East, such as Dr. John Wyeth of New York City, Dr. Hugh Young of Baltimore, and others. Dr. Rolater was well and favorably known by the leaders of the profession in New York more than twenty-five years ago.

In 1906 Dr. Rolater organized and built the Rolater Hospital in Oklahoma City which later was leased for a term of years and became the University Hospital as a part of the State University of Oklahoma School of Medicine.

Always interested in medicine and surgery he participated in the organization and became a charter member of both the Oklahoma County and the Oklahoma Territorial Medical Societies where in the early days he was especially active.

Not only in his profession but as a business man was Dr. Rolater successful. At the time of his death he was rated as one of the largest individual owners of real estate in Oklahoma City.

As a splendid gesture one of the last acts of his life was to build a church at Cave Springs, Ga., where he spent his boyhood school days and present it to the congregation.

To many of the Oklahoma pioneers Dr. J. D. Rolater was the only surgeon and to those who came to know and understand him he was respected and admired and in many instances beloved.

By the profession Dr. Rolater will be remembered as a man of indomitable will with few close friendships and as a surgeon of more than ordinary training and ability.

ENDEMIC EDEMA

John B. Youmans, Nashville, Tenn. (Journal A. M. A., Sept. 10, 1932), reports cases of edema which differ in several respects from cases of nutritional edema reported by others, particularly those seen during epidemics. In general, the disease, is milder and the patients are less severely undernourished. The symptoms of severe undernutrition, bradycardia, hypotension, subnormal temperature and lowered metabolic rate are lacking. The absence of any disease causing the malnutrition distinguishes them from most of the sporadic cases. The changes in the serum protein are consistent with the mild nature of the symptoms. Greater reductions in the serum proteins have been reported by other writers. In some instances variations in the methods are responsible for the difference. Much more important is the difference in the severity of the disease and the circumstances under which the author's studies were made. A lowered osmotic pressure due to lessened serum proteins is but one of the two principal factors at present thought to be concerned in this form of edema and determines only a tendency to edema. The other factor is capillary pressure, and the occurrence of edema probably depends primarily on the balance of force between the capillary pressure tending to push fluid out of the vessels and the osmotic pressure tending to hold it in. An increase in capillary pressure can cause a filtration of water from the blood in the presence of normal amounts of protein. Krough Landis and Turner have recently shown that the erect human being is always near edema. Therefore even a slight reduction in serum protein might result in the formation of edema, provided the capillary pressure remained unchanged, and edema would be more apt to occur if the capillary pressure were increased. All the patients studied by the author were ambulatory patients, more or less engaged in their usual activities, and it might be expected, therefore, that edema would occur at higher concentrations of serum protein than in patients who were confined to the hospital and whose activities were greatly restricted. The influence of the restriction of physical activity is well shown by two patients who were hospitalized and who quickly lost 4 and 2 Kg., respectively, with little or no change in the diet. These cases of endemic edema have an importance out of all proportion to the mildness of the symptoms. They represent, the author believes, the effect of a dietary inadequacy of slight degree but long duration. In the past, interest has been focused on relatively acute and well developed cases of deficiency disease in which there exist gross inadequacies. At present attention is being directed to milder and more chronic disorders; to the effect of minimum or suboptimum conditions of diet, rather than severe deficiencies. Disease which is the result of gross inadequacy may be of greater individual importance, but, on the other hand, is more easily and earlier detected and remedied. Less serious errors in diet, with their greater frequency and more subtle effort on a population, are of vastly greater general importance. In the present cases the edema itself probably has little harmful effect on the patient. If, as seems likely, the principal dietary inadequacy in these cases is a lack of protein, the edema is important only so far as it indicates a prolonged but mild protein insufficiency. Relatively little is known regarding the effect of such a deprivation in man or what constitutes the optimum amount of this food substance.

ABSTRACTS • REVIEWS • COMMENTS AND CORRESPONDENCE

SURGERY AND GYNECOLOGY

Abstracts, Reviews and Comments from LeRoy Long Clinic

714 Medical Arts Bldg., Oklahoma City

Results of Operations for Prolapse of the Uterus and Bladder. George M. Laws, M.D., Philadelphia, Pa. American Journal of Obstetrics and Gynecology, December, 1932, Page 864.

This is a report based upon 200 consecutive operations performed upon 196 patients for all degrees of relaxation of the anterior vaginal wall and of prolapse of the uterus. It is pointed out that the most important consideration in determining the nature and extent of operative treatment is whether or not the menopause has been passed. The remainder of the article is principally a tabulation of the various procedures with the results obtained.

Ninety-five patients were treated before the menopause and 101 after the menopause. Of the patients treated before the menopause fifty-two were treated with plastic alone. Thirty-five with abdominal operation and plastic and five with vaginal hysterectomy. The most significant point that is made concerns the fact that plastic operations alone where there is bladder and uterine prolapse is an incomplete operation and recurrence of symptoms is much more likely than if the plastic were supplemented by abdominal operation and suspension of the uterus.

Of the operations after the menopause thirty-nine had plastic operation alone. Thirty-seven had the interposition operation. Eight had vaginal hysterectomy. Thirteen had abdominal and plastic operations and four had abdominal operation alone. The result of the operations after the menopause justifies the treatment of the majority of the cases of genital prolapse by vaginal operations in the opinion of the authors.

Consideration is also presented for relaxation of the urethral sphincter and twenty cases reported in which the Kelly plication operation was done. The results indicate that with great frequency too little attention is paid to bladder symptoms and inadequate operation is frequently performed. Briefly, the difficulty of restoring anatomic and physiological conditions in the bladder base and the urethra are frequently minimized.

Comment: This article merely emphasizes a good many of the features that are constantly considered by gynecologists, the principal ones of which are that adequate and complete, rather than inadequate, incomplete, operation should be more often performed, and that in the majority of cases after the menopause vaginal operations are preferable. It should not be overlooked, however, that in this field, as well as others, individualization of a particular case and situation is invaluable.

—Wendell Long.

Temporary Sterilization by the Injection of Human Spermatozoa. A Preliminary Report. M. J. Baskin, M.D., Denver, Colo. American Journal of Obstetrics and Gynecology, December, 1932, Page 892.

These authors have treated 20 women by injection of human spermatozoa given in three injections seven days apart with a total volume of semen amounting to an average of 9 c.c. in each case. They have subsequently examined slides made in the following manner: One with human spermatozoa, one with spermatozoa to which nonimmunized blood serum was added, and one with human spermatozoa to which immunized serum was added. Cervical secretions were also tested against serum in every case. It has been found in their 20 cases that with but one exception that for a period of about a year the immunized serum will kill spermatozoa in about thirty minutes at first and in about two to four hours at the end of the year, and that sterilization without pregnancy is maintained over this period.

They summarize from the extensive literature the following conclusions:

1. Immunization of women with human spermatozoa is possible.

2. The immunization lasts about one year.

3. Revaccination at end of year prolongs the immunity for at least another year.

4. The period of immunity and degree of immunity can be determined by the blood.

Again quoting from their work is the following paragraph:

"A number of questions must be answered concerning this work. Principally among these are: first, possibility of permanent sterility; second, whether ovarian changes occur; third, whether there is any effect of future generations. We are now carrying on work in an attempt to answer these questions.

Comment: This is an interesting bit of experimental work upon which no comment seems to be necessary other than to theorize as to wether it is a question of specific protein sensitization or a situation of hormone significance.

—Wendell Long.

The Treatment of Irreducible Intussusceptions in Children. Albert H. Montgomery, M.D., and J. J. Mussil, M.D., Chicago. Surgery, Gynecology and Obstetrics, September, 1930, Page 415.

One of the baffling pathological conditions that may confront the surgeon is an irreducible intussusception. The seriousness of this condition is augmented by the fact that most of them are found in very young children, since 80% of intussusceptions occur in children under two years of age. In addition, these young patients are suffering from the toxemia that is produced by an intestinal obstruction. Perrin and Lindsay

report 400 cases of acute intussusception in which the irreducible ones under all forms of treatment caused a mortality of 100% in children under 2 years of age, and 70% in older children.

The surgeon who finds that his patient has an intussusception that he cannot reduce faces a grave problem. He may try various procedures, such as: 1. An artificial anus, by making an enterostomy or a colostomy above the obstruction, leaving the intussusception in the abdomen. 2. A lateral anastomosis around the obstruction leaving the intussusception in the abdomen. 3. A resection of the intussusception making an artificial anus of the ends of the bowel as in the Mikulicz's operation. 4. A resection of the intussusception with a lateral or end to end anastomosis. 5. A resection of the intussusception through an incision in the outer layer as in the Coffey operation.

There are objections to each of the various operations. In young children any operation which includes the making of an artificial anus will probably lead to a fatality, as the infant loses too much food and water through the artificial opening.

Some writers have objected to operations which leave the intussusception in place thinking that there is grave danger in the sloughing that will follow. The ideal treatment, of course, is to remove the strangulated portion and re-establish the continuity of the bowel by anastomosis. Unfortunately, however, all such operations seem to be too formidable for young children.

Since the advent of surgery in the treatment of intussusception reports of spontaneous elimination have naturally been rare. However, it is known that nature cures some of these irreducible intussusceptions. Treves is quoted as saying, "If the intussusception be irreducible then cure by spontaneous reduction is impossible, as is also reduction by means of forcible enemata or by laparotomy. On the other hand if the tissues of the mass be glued together by adhesions about the neck, the parts are most advantageously placed for spontaneous recovery by elimination of the gangrenous intussusception."

It was by taking advantage of this tendency to spontaneous cure that the authors were able to achieve success in two cases, after total failure in other cases in which the procedures involving resection already mentioned were used. Their good results were attained by simply fixing the intussusception in place by a row of interrupted silk sutures about the neck and then making a lateral anastomosis between the ileum and the colon distal to the intussusception.

Encouraged by the successful outcome in these two cases and before attempting to draw any definite conclusions they carried out some experimental work on dogs. The conclusions from this experimental work were:

1. In dogs, in which a portion of bowel is invaginated and fixed, there is first a very strong tendency towards spontaneous reduction and in case the invagination remains in place, the bowel will function with little disturbance in the general health of the dog.

2. Invagination alone is not sufficient in dogs to produce an obstruction to the blood supply to the invaginated portion of the bowel.

3. Dogs in which the blood supply to a portion of the bowel is first shut off and then invaginated will die with a picture of chronic obstruction.

4. Lateral anastomosis of ileum to cecum around the intussuscepted portion of bowel will permit a normal function of the remainder of the bowel with no disturbance to the general health of the dog.

Comment: Two young children with very definite irreducible intussusceptions were successfully treated by fixing the irreducible part in position by a row of silk sutures placed about the neck and short circuiting this obstructed portion by a local anastomosis.

I have operated upon 15 cases of intussusception. In every instance where a resection with anastomosis was done there has been a death. It is commonly stated that where a resection is necessary there is little hope of recovery.

For this reason any objection one might have to a procedure which allows the intussusception to remain in place because of fear of the sloughing that will follow must be lessened by the knowledge that the ideal procedure is almost certain to be fatal, whereas this procedure is nature's way of relieving an irreducible intussusception and that it has been successfully used by the authors.

I have never carried out this simple procedure advocated but I shall most certainly do so the next time I am confronted with an irreducible intussusception.

—LeRoy Downing Long.

Traumatic Tuberculous Peritonitis Following Contusion of the Abdomen (Contusion de l'Abdomen—Peritonite Tuberculeuse Traumatique Consecutive) by Paul Guibal, Beziers. La Presse Medicale, Oct. 8, 1932.

A boy of eight years was playing late in the afternoon by running along a road pushing a stick seven or eight feet long, the end of the stick being held in the hands next to the abdomen. The end of the stick on the ground struck a rock. The blow on the abdomen was so violent that the boy was thrown on his back. There was complaint of pain in the abdomen, but he was able to walk a short distance to his home where he ate supper with a good appetite, complaining of pain in abdomen occasionally. That night there was a good deal more pain.

Patient was seen by a physician at 4:00 P. M., next day, at which time there was sharp pain in abdomen, muscular resistance, temperature 103, pulse 110. No vomiting.

On admission to hospital three hours later—exactly twenty-four hours after accident—good facial expression, pulse 132, rectal temperature 104. Still no vomiting. Bowels had not moved since accident. Pain and tenderness just below umbilicus at point of injury. Muscle tension below, but none above umbilicus. No ecchymosis. Slight distention abdomen which was immobile on deep inspiration.

Immediate operation disclosed distended small intestine with here and there discrete ecchymosis. There was a very little dark blood in pelvis. On displacing viscera upwards so that mesentery could be examined some thin, caseous material was found near the the root of it. There was an enlarged lymph gland the size of a small egg. A further investigation showed a rent in the

mesentery leading into a small abscess from which the caseous material escaped. Obviously it had been ruptured by the blow on the abdomen. The abscess was cleaned out and tincture of iodine applied to inside of it by gentle swabbing. An attempt was made to close opening to abscess, but it was difficult because of the fragile margins and the danger of wounding inside of mesentery. Gross material was removed from abdomen which was then closed without drainage.

The patient did well for several weeks, but at the end of thirty-five days examination revealed distended adomen with palpable indurated nodules. Rectal touch showed masses in pelvis. There were indurated glands in the groins, and a small "cold abscess" in the operative incision. Patient had lost weight and was pale. Pulse 100. Rectal temperature 101.3. The conclusion was that the patient had a fibro-caseous form of tuberculous peritonitis due to traumatic intraperitoneal rupture of a caseous lymph gland in the mesentery (peritonite tuberculeuse traumatique a forme fibro-caseuse par rupture intraperitoneale d' un ganlion caseux du mesentere), the inoculation having been produced in exactly the same way as in laboratory animals when tuberculous material is injected into peritoneal cavity.

After three months of unfavorable progress systematic heliotherapy and appropriate hygienic measures resulted in apparent cure. Patient was examined June, 1932, and condition found to be excellent.

The author points out that in this case there was no evidence of tuberculosis outside of peritoneal caviety.

Comment: This report indicates two important truths:

1. Surgical tuberculosis, such as tuberculosis of the mesenteric lymph glands, of fascia, bone, skin, connective tissue is by no means necessarily associated with pulmonary tuberculosis. It appears pretty clear that many cases of this character are due to infection by the bovine bacillus which does not have a predilection for lung tissue.

It will be recalled that at one time Prof. Koch did not believe in the duality of tuberculosis. I visited the Koch Laboratory in 1913, and while there I asked Prof. Israels, Koch's successor, if he would tell me what Prof. Koch's final conclusion was on this point. He replied that long before his death Koch was of the definite opinion that there was a distinct difference between human and bovine tuberculosis in many respects, and that it was his conclusion that most of the cases of so-called surgical tuberculosis were due to infection by bovine bacillus.

2. The remarkable work of continental physicians, especially in Switzerland and France, and notably by such able men as Rollier, has demonstrated the great value of heliotherapy in surgical tuberculosis. It appears that it is more effective in high altitudes, but its probable value should not be overlooked, regardless of locality.

—LeRoy Long.

UROLOGY and SYPHILOLOGY

Edited by Dr. S. D. Neely, M.D.
Muskogee, Okla.

Interstitial Keratitis in Late Congenital Syphilis. Harry M. Robinson, Baltimore, Md., Southern Medical Journal, for September, 1932.

In a study of 144 cases the author indicates that the diagnosis of interstitial keratitis is not made until irremediable corneal scarring has occurred. This may be due to failure to appreciate the importance of congenital syphilis in the etiology of this condition, to the unfamiliarity with the common stigmata of late congenital syphilis, or to failure to employ routine Wassermann tests as a measure of diagnosis. Interstitial keratitis is equally frequent in white and colored males and females. Adequate modern treatment shortens the course of the acute inflammatory process in interstitial keratitis, materially lessens residual corneal scarring, improves the ultimate visual acuity, and lessens the incidence of relapse. Interstitial keratitis which is usually unilateral originally can be prevented from becoming bilateral by adequate treatment in a high proportion of cases.

Syphilis in the Rural Negro. D. G. Gill. Montgomery, Alabama. Southern Medical Journal for September, 1932.

In this article a survey of the prevalence of syphilis amongst rural negroes was made in Macon County, Alabama. A total of 3603 individuals of all ages were tested; 1282, or 36% had positive Kahn tests. 1203 were placed under treatment, and 317 of these were classed as congenital, 866 as acquired. Of those who were put on neo-arsphenamine, 60.92 per cent completed their coure of treatment. The average patient received 15.85 doses of neo-arsphenamine, and mercury inunctions for 21 to 85 weeks. There was a reversal of the Kahn test in 56% of 875 patients who received neo-arsphenamine and mercury. Of the males 49.33% gave a history of a primary lesion, only 2.54% of the females gave a similar history. Previous therapy had been nil or very inadequate. A history of one or more miscarriages was frequent among the infected females. The average cost per patient was $10-.65. He concludes from this that field clinics are feasible for mass treatment if attached to a well functioning county health department.

Unsuspected Lues Revealed by the Routine Wassermann Test. Charles R. Drake, Minnesota Medicine for December, 1932.

This article deals with the number of positive Wassermanns picked up in a general hospital (Swedish Hospital, Minneapolis), for the months November and December, 1931, January and February, 1932. During this time 1113 Wassermanns were taken on all cases entered except tonsil cases. Sixteen in this series were positive, they were rechecked and a second test confirmed the first. All of these were unsuspected cases of syphilis, were evident chronic infections which had never been treated and were coincident with

the various medical and surgical conditions for which the patients were admitted.

Mortality in Cystoscopy. Charles D. Donahue, Eugene Oregon, Northwest Medicine for December, 1932.

The author mailed questionnaires to thirty different urologists of the United States, all of whom were members of the A. U. A., asking for the mortality from cystoscopy during the past five years, also the number of cystoscopies. There were twenty-six to answer. This twenty-six men had done 90,200 (approximately) cystoscopies in the past five years, and one death occurred in 6,442 cases. This included all types of cystoscopic work, pyelography, and all types of patients including all those who were known to be poor risks. Most of the deaths occurred in what was called "poor risks." He enumerates the contraindications for cystoscopy, pointing out two classes. (1) Those in which it is contraindicated, being (a) acute urethritis, and acute cystitis. (b) Cord lesions with paralysis of the bladder and uninfected urines. (c) Active luetics with pyuria, these should first receive antiluetic therapy. In the second group he includes those cases which should be approached with caution. (a) Carcinoma of the prostate and malignant bars, (b) contracted tuberculous bladders, (c) chronic and deep seated infections of the bladder, (d) strictures of the posterior urethra, (e) diabetics, (g) leukemias and (h) exophthalmia.

Caudal Anaesthesia in Urology. Raymond A. Harpin, New England Journal of Medicine for January 5th, 1933. Page 31.

The author states that the lack of adoption of caudal block anaesthesia is the reason cystoscopic manipulations are looked upon with dread by the majority of patients either because of personal experience or from knowing patients who recounted tales of their own trials. He recounts this anaesthesia done by him on the house service of Massachusetts General Hospital and in private practice since October 1, 1931—113 are reported. He describes the technique of caudal block. If after the needle has been introduced in sacral notch and no blood or spinal fluid is received on suction 20 to 30 c.c. of 2 to 3% procaine hydrochloride solution is injected slowly. Patient is turned on back, and it will be found that with good block, the skin of the anus, scrotum, perineum, penis or vulva is anaesthetized, as is also the lower rectum, vagina, urethra, prostate, posterior wall of bladder and ischio-rectal fossae. As preliminary treatment he gives 3 to 6 grains of sodium amytal one hour before operation as it gives the required sedation and to some people being sensitive to procaine hydrochloride, this barbaturic acid derivative offers some protection.

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CLINICAL TEACHING OF PREVENTIVE MEDICINE

Dwight O'Hara, Boston (Journal A. M. A., Aug. 27, 1932), presents the fourth year teaching of preventive medicine at Tufts College Medical School. Patients sick in their homes and cared for by the fourth year students, under supervision, are used as clinical material. The students have conferences with clinicians who are interested but not specifically trained in the science of public health. The opportunities for and the limitation of preventive measures are thus pointed out under the actual circumstances that confront the practicing physician. A few specific situations are discussed.

KETOGENIC DIET IN TREATMENT OF URINARY INFECTIONS OF CHILDHOOD

Henry F. Helmholz, Rochester, Minn. (Journal A. M. A., Oct. 15, 1932), states that by the use of the ketogenic diet the urine can usually be rendered bactericidal when its ph is below 5.6. The bactericidal power apparently is not due to acidity alone or to the presence of diacetic acid or sodium diacetone. Acidity in synergy with substances hitherto not yet determined probably accounts for this bactericidal action. Ketonurine (condition of the urine after the administration of a ketogenic diet) of a ph of 5.5 is an excellent antiseptic for clearing urinary infections, and ketonuria should prove useful in the preparation of patients for operation on the urinary tract. By means of the ketogenic diet three patients with major urinary anomalies have been freed from infection. At the Mayo Clinic no other method of treatment has been successful in this type of case. The clearing of an infection by means of the diet does not necessarily mean permanent cure.

NEUROLOGIC FEATURES OF PERNICIOUS ANEMIA

Richard H. Young, New York (Journal A. M. A., Aug. 20, 1932), presents an analysis of the neurologic aspects in patients with pernicious anemia who have been admitted to the Peter Bent Brigham Hospital from its opening in 1913 to January, 1931. In this series of 515 cases there were 103, or 20% of the cases with well defined cord changes marked by reflex changes and ataxia. The incidence would have been much higher if lesser changes of the nervous system had been included. From his observations the author concludes that the associated lesions of the central nervous system in pernicious anemia may present a variegated symptomatology and may be disseminated in location.